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# TRANSVAAL MUSEUM

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THE SPHEGIDAE OF SOUTH AFRICA. PART VIII

By GEORGE ARNOLD, D.Sc., A.R.C.Sc., F.E.S.

NOTES ON SOME ASILINAE OF THE SOUTH AFRICAN REGION

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OF *HELIOTROPIMUM* IN THE TRANSVAAL  
MUSEUM HERBARIUM

By Miss D. KAPLAN, B.Sc.

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## TRANSVAAL MUSEUM

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## THE SPHEGIDAE OF SOUTH AFRICA

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## PART VIII

With 45 Text-figures

THE genus *Belomicroides* was founded by Kohl on a species from Algeria (*Schmiedeknechti*), and was subsequently reduced by the same author to the rank of a subgenus of *Belomicrus*, mainly on the similarity of the venation. This step appears to me to have been erroneous, for apart from the venation there are several other characters, indicated in two new species as well as in the type of the genus, which show that *Belomicroides* is not very closely allied to *Belomicrus*. It is in fact, as is sufficiently indicated by the diagnosis of the generic characters, a genus annectant between the Thyreopinae and the Oxybelinae. The new subgenus of *Belomicrus*, *Brimocelus*, connects it remotely with the Oxybelinae.

As a matter of convenience it has been included in the key to the genera of Oxybelinae on p. 59, but it should be understood that it is distinctly separated from that group.

## Genus BELOMICROIDES Kohl.

*Ann. K.K.N.H. Mus. Wien*, XIV, p. 312. 1899.*Konowia*, II, Heft 3, 4, p. 180. 1923.

CHARACTERS. Face flat and wide, without prominences or excavations, not wider above than below, the inner orbits of the eyes subparallel, slightly divergent above and below, the facets of equal size. Mandibles acute at the apex, with a blunt angle at about the middle of the inner margin and excised at the middle of the outer margin. Maxillary palpi 6-, labial palpi 4-jointed. Lateral sclerites of the clypeus well developed, not short and almost linear as in *Belomicrus*. Antennae 13-jointed in the ♂, 12-jointed in the ♀; the first joint of the flagellum as long as, or a little longer than the second, the scape not longitudinally carinate in front. Thorax broad and stout, The pronotal

collar short, not sunk far below the level of the mesonotum. Mesothorax with a distinct epinotum in front, the episternal suture clearly defined. The suture between the mesonotum and scutellum is not dilated laterally. Median portion of the metanotum raised, forming a transverse torus which is concave from side to side, the concavity sloping downwards anteriorly, the lateral edges trenchant. Dorsum of the epinotum without an enclosed median area. Abdomen subovate, the first segment broad, not petiolate or clavate, the tergites without lateral teeth in the ♂, such as are present in *Oxybelus*. The first two tergites are subcarinate along the edge of the dorso-ventral fold, but not sharply flexed as in *Belomicrus*; second to fourth, or only the third and fourth tergites sometimes with transverse grooves at the base, which are villose in the ♂. Pygidial area clearly defined, more or less triangular in the ♀, trapezoidal in the ♂. The sixth sternite or ventral valve of the pygidium in the ♀ is laterally compressed to form a high carina or lamella which is free and rounded at its apex (this character is exhibited in our two species, but may be absent in *Schmiedeknechti* since it is not mentioned in the description of that species). Tibiae spinose, the last tarsal joint not enlarged. Venation similar to that of *Belomicrus*, but the distal portion of the cubital vein and the first recurrent vein are continuous, *i.e.* they form no angle at their junction. The single cubital cell, which really represents two cubital cells merged into one, is separated from the first discoidal only by a very faint *vena spuria*. The radial cell is not appendiculate.

Type of genus, *B. Schmiedeknechti* Kohl.

*B. pictus* n.sp. (figs. 1, 1 a and b).

♂. 5 mm. long. Black; apex of the mandibles ferruginous, the rest ochreous. Anterior tibiae and tarsi, the apices of the femora, extreme base of the middle and hind tibiae, pronotal tubercles and the tegulae, pale yellow. Middle tibiae reddish yellow, darker basally; the apex of the hind tibiae and the middle and hind tarsi more or less pale ferruginous, the metatarsi brown. Face with a short and dull silvery pubescence, the rest of the body with a sparse, short and whitish pubescence, nowhere conspicuous and almost absent from the dorsum of the epinotum. Median area of the clypeus slightly shining, sparsely punctured in front, more finely so behind, moderately convex, somewhat produced, its anterior margin convex, slightly thickened, the anterior angles rectangular. Face dull, densely and finely punctured, the vertex a little more strongly and less closely punctured and slightly shining, the temples closely, finely and shallowly punctured.

A shallow impressed line extends from the posterior ocelli almost to the margin of the eyes. Sides of pronotum feebly rugulose and shining, the rest of the thorax dull. Collar of pronotum and the mesothorax closely and fairly finely punctured, the mesonotum with traces of longitudinal striae between the punctures. Dorsum of epinotum very finely reticulate-punctate, with longitudinal rugae superimposed; these radiate outwards from the base and fade out before reaching the lateral and posterior margins. Brow of the declivity rounded; the declivity is vertical, very closely and finely punctured and also transversely rugulose. It is marginate at the sides, the margin being continued upwards as a raised line which separates the dorsum of the epinotum sharply from its vertical

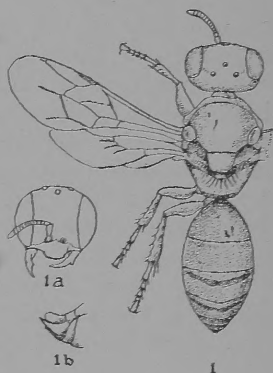


Fig. 1. *Belomicroides pictus*, ♂, a, head; b, apex of abdomen.

sides. The latter are almost microscopically and closely reticulate-punctate. Metapleurae transversely striate. Tergites 1-5 almost dull, the first two shallowly, closely and finely punctured, but on the remaining tergites the sculpture becomes gradually shallower towards the fifth tergite, with the punctures wide apart. Sixth tergite sparsely and coarsely punctured; pygidial area shining, sparsely and shallowly punctured. The third and fourth tergites, just a little beyond the base, are deeply and transversely grooved, the grooves slightly interrupted in the middle and covered with a dense, brown and velvety pile. The grooves do not reach the lateral margins of the tergites. Sternites shining, the first finely and not closely punctured, the rest more coarsely and more sparsely punctured, chiefly on their apical halves.

Median area of clypeus about as long as wide. The mandibles have several long hairs on their outer margin. Scapes short, twice as long as wide at the apex and twice as long as the first joint of the flagellum. The latter is as long as wide and nearly twice as long as the second joint. The second to eleventh joints wider than long, the last joint rounded apically and half as long again as wide at the base.

Face fairly flat, about as wide above as below, the inner orbits of the eyes slightly divergent above and below. The ocelli are arranged in a low isosceles triangle, the posterior pair twice as far from each other as they are from the eyes and from the anterior ocellus. Temples, when viewed from the side, about as wide as the eyes. Pronotal collar a little lower than the mesonotum, the anterior corners widely rounded. Mesonotum twice as long as the scutellum, the latter moderately narrowed posteriorly. The median area of the metanotum is raised, transversely excavated, the surface sloping forwards, forming a more or less saddle-shaped tubercle or torus which is vertical posteriorly and slopes outwards at the sides. The dorsum of the epinotum is short, about two and a half times wider at the apex than long in the middle. Middle and hind tibiae with two rows of whitish spines on the outer margin. Middle tibiae with a strong spur, half as long as the metatarsus; hind tibiae with two spurs, the inner one two-thirds as long as the metatarsus. Wings hyaline; stigma and veins pale brown. Radial cell narrowly truncate at the apex; the second abscissa of the radius is about two and a half times longer than the first. The anterior coxae are angularly dilated outwardly at the base. Mesopleurae without a transverse ridge in front of the middle pair of coxae.

♀. 5 mm. long. The colour in this sex is doubtless very variable; the following is the description of the type, which differs noticeably in colour from two ♀ specimens from Rhodesia, described farther on.

Mandibles excepting their ferruginous apices, median area of the clypeus and the scapes, pale yellow; the flagellum blackish above and ochreous below; the rest of the head black. Pronotal collar and tubercles, a spot on the inside of the tegulae, and disc of the metanotum, pale lemon yellow, the rest of the thorax black. Abdomen ferruginous. Anterior and middle coxae, trochanters, femora and tibiae lemon yellow, the femora with a blackish streak behind, the tibiae somewhat ochreous apically. Anterior tarsi pale ochreous, middle and hind tarsi pale fusco-ferruginous with the apical joint paler. Posterior coxae black, yellow at the apex, the trochanters black, the femora blackish with a yellow streak over the apical two-thirds of the outside. Posterior tibiae fusco-ferruginous, dirty yellow outwardly. Wings milky hyaline, the veins and stigma pale ochreous, the costa and radius slightly darker. The sculpture is like that of the ♂, but a shade shallower and closer, especially on the head and abdomen; the median area of the clypeus, however, is smooth and shining, and the sternites are almost impunctate, except the second which is very finely and fairly distantly punctured. The pubescence is like that of



the other sex, but the margin between the temples and ventral surface of the head has a row of long, exserted and whitish hairs. The tergites are simple, the third and fourth lacking the transverse villose grooves which are present in the ♂. The inner margins of the eyes are parallel for the greater part, only the lower fifth being slightly divergent. Second joint of the flagellum a little longer than wide at the apex, the third as long as wide, the fourth to tenth wider than long, the apical joint a little longer than wide. Sixth sternite with a median longitudinal carina which rises posteriorly to form a strong lamella, rounded and free at its apex. Pygidial area shining, sparsely and coarsely punctured, slightly narrowed in its apical third, longer than wide at the base, the apex narrowly truncate. The anterior metatarsi have their lower apical angle produced forwards, and the outer margin has a row of six long hairs, with a few shorter ones in between. Otherwise like the ♂.

Two ♀♀ taken at Sawmills, S.R., differ from the type as follows. Femora and tibiae yellow, with a reddish longitudinal streak on the inner side. The posterior coxae black only over the basal fourth. Pronotum lemon yellow, black only in the middle of the neck and of the anterior face of the collar; prosterna yellowish behind. Mesonotum with an elongate triangular yellow mark at the anterior angles. The scutellum, except its anterior margin, lemon yellow. Mesopleurae entirely lemon yellow in front of the episternal suture, behind it yellow in the middle with the upper and lower fourth black. The extreme apical margins of tergites 1-5 depressed and hyaline, behind which the apical third of the segments is chrome yellow, the rest ferruginous and the first three irregularly suffused with black in the middle. Sternites 1-3 blackish, their apical thirds yellow, the remaining sternites ferruginous. The epinotal dorsum has shorter rugae than in the type, barely reaching the middle of the segment.

Apart from sexual differences, the structure of the ♂ and ♀ shows the closest resemblance. The colour, however, is totally different and I would have hesitated on that account in uniting the two under one species in view of the fact that they were taken in localities as far apart as Ceres and Willowmore. However, the occurrence of the two sexes at Sawmills, S.R., in situations not more than half a mile apart, seems to justify the association. 1 ♂, Willowmore, December, type in coll. Dr H. Brauns; 1 ♀, Ceres, December (R. E. Turner), type in Brit. Mus. coll.; 8 ♂♂, Sawmills, December (G. Arnold), flying round a small tuft of grass, and 2 ♀♀, Sawmills, January (R. H. R. Stevenson).

(R.M. and T.M. colls.)

*B. Marleyi* n.sp.

♀. 6.8 mm. long. Black; scapes, pronotal collar excepting the lateral angles posteriorly, pronotal tubercles, tegulae, scutellum and disc of the metanotum excepting their lateral and anterior margins, ochreous. Flagellum brown above, ochreous below. Anterior tibiae brownish ochreous, somewhat darker below. Anterior femora at the base and apex and a spot underneath near the apex, the middle femora excepting the base on the under side, the extreme base of the middle tibiae, a streak on the upper margin of the hind tibiae and a spot on the under side of the hind femora near the apex, reddish ochreous. Otherwise the tibiae and femora are very dark brown. Tarsi brownish, with the apical joints ochreous. Spines on the legs whitish, the calcaria ochreous. Wings hyaline, veins and stigma brownish yellow. Pygidial area fusco-ferruginous on the apical half. Clypeus and lower half of the face with a fairly dense yellowish pubescence. Vertex, occiput and temples with a scantier pubescence of yellowish grey colour, the lower margin of the temples

and of the mandibles with a row of long, exserted and yellowish hairs. Mesothorax, legs and abdomen with yellowish grey pubescence, the apical margins of the sternites and the sides of the pygidium with longer and outstanding hairs. Head and pro-mesothorax dull, closely and finely punctured, the median area of the clypeus somewhat shining and with the puncturation obliterated. Sides of epinotum dull, closely transversely striolate, the declivity transversely rugose, the dorsum strongly rugose from the base to the brow of the declivity, the rugae divergent from the base, the spaces between them microscopically coriaceous. The scutellum is not more strongly punctured than the mesonotum, but it shows a faint longitudinal striation in addition, the punctures lying between the striae. Abdomen moderately shining, the first two tergites microscopically and transversely rugulose, the third and fourth sparsely and finely punctured, the fifth a little more strongly punctured, the pygidium strongly and closely punctured, subtriangular, the apex truncate, the sides concave over the apical two-thirds. The ventral valve of the pygidium is laterally compressed and raised into a high lamella which is rounded at its apex; it is not quite so strongly compressed as in *B. pictus*. The second and third tergites are transversely grooved at the base, the grooves widened in the middle, smooth and without pubescence. Clypeus similar to that of *B. pictus*, but the median area is less produced, so that the lateral sclerites are almost as long as the median. First three joints of the flagellum subequal, a little longer than wide, the apical joint as long as the two preceding united, the other joints a little wider than long. The structure of the thorax and legs is like that of *B. pictus* ♀, but the anterior femora are very thick and acutely triangular in cross-section over the basal half. The anterior metatarsi have nine long and short spines on the outer margin.

Durban, December (W. H. Bell-Marley), 1 ♀. Type in Durban Museum.

#### Subfamily OXYBELINAE

GENERAL CHARACTERS. Radial cell with a small accessory cell, or none at all. The cubital cell is confluent with the discoidal cell, being separated from it only by a barely visible portion of the cubital vein (*vena spuria*). The angle formed by the junction of the transverse cubital vein with the cubitus is acute or rectangular. Face only slightly excavated or not at all. Middle tibiae with one spur. A tarsal comb on the fore legs usually present in the ♀, and sometimes a feeble one in the ♂. Pygidial area distinct in both sexes. Metanotum usually with lateral membranous squamae and the epinotum always with a process in the middle of the dorsum, excepting the genus *Anoxybelus* from Baluchistan.

#### KEY TO THE GENERA AND SUBGENERA OF OXYBELINAE, INCLUDING *BELOMICROIDES*

- (8) 1. Last tarsal joint not swollen; accessory cell of forewing, if present, very small, so that the radial cell appears lanceolate or acute at the apex. ♂♂ without lateral spines on the tergites.
- (5) 2. Tergites 1-5 (and 6 in the ♂) abruptly folded under at the sides, so that the ventral and dorsal portions of the tergites form a sharp edge at their junction: the sternites are flat. Disc of metanotum nearly always with lateral squamae, the dorsum of the epinotum armed with a median process. A tarsal comb usually present in the ♀ but absent in the ♂.
- (4) 3. Flagellum short, the joints, excepting the first two and last, as wide as, or wider than long; mandibles edentate on the inner margin or with a dentiform angle at about the middle, the upper margin not dilated

- outwardly in the middle. Surface of body usually dull, the puncturation fairly fine. genus *Belomicrus* s.lat. Ach. Costa
- (3) 4. Flagellum long, the first five or six and the apical joints longer than wide, the rest as long as wide. Mandibles with a very large tooth at the basal third of the inner margin; the outer margin dilated above at about the middle and the basal third arcuately emarginate. Puncturation sparse and coarse, the surface shining. *Belomicrus*, subgenus *Nototis* Arnold
- (2) 5. Tergites not sharply folded under at the sides, the sternites not flat. No distinct tarsal comb present in either sex.
- (7) 6. Disc of metanotum large, subquadrangular, concave transversely, the lateral margins and the posterior angles raised but not furnished with distinct squamae; epinotum with a mucro, the dorsum of the epinotum strongly sculptured. *Belomicrus*, subgenus *Brimocelus* Arnold
- (6) 7. Disc of metanotum small, forming a small segment of a circle, its lateral margins raised, somewhat saddle-shaped; epinotum without a process of any sort, the dorsum feebly sculptured (♀ with a high and lamelliform carina on the sixth sternite; ♂ with transverse villose grooves near the base of the third and fourth tergites). genus *Belomicroides* Kohl
- (1) 8. Last tarsal joint swollen (third to sixth tergites simple, not sharply folded under at the sides, the sternites not flat). Second to sixth tergites in the ♂ with lateral spines. A tarsal comb present in both sexes. Accessory cell of forewing wider, so that the radial cell is not acute at the apex. Abdomen obconical or cordate. genus *Oxybelus*, s.lat. Latr.

Genus *BELOMICRUS* Ach. Costa.

*Ann. Mus. Zool. Napoli*, vi, p. 80. 1866.

*Oxybeloides* Radoszkovski, in Fedtschenko, *Reise in Turkestan*, II, p. 68. 1877.  
*Oxybelomorpha* Brauns, *Ann. K.K.N.H. Mus. Wien*, XI, p. 475. 1896.

CHARACTERS. Head as wide as, or wider than the thorax, rarely narrower. Face wide. The eyes reach the base of the mandibles, or very nearly so; they are either regularly elongate-oval or somewhat widened below, in the latter case the facets in the widened portion are larger than the rest. Ocelli arranged in a low isosceles triangle, the posterior pair always nearer to the eyes than they are to each other. An oblique impression between them and the eyes is usually present. As a rule the mandibles are not excised on the outer margin, and their apices are acute; the inner margin edentate or with an angular projection near the middle. Median area of the clypeus more or less produced, in the ♂ without teeth on the anterior margin such as are present in *Oxybelus*. Antennae 13-jointed in the ♂, 12-jointed in the ♀, inserted close to the posterior margin of the clypeus and fairly far apart or at least not contiguous. The joints of the flagellum, excepting the first and last, are at least as wide as long. Pronotum short, the collar not linear, not much lower than the mesonotum. A well-defined epicnemium is present on the mesopleurae, and the episternal suture is distinct. Scutellum usually without a median longitudinal carina, sometimes with angular posterior corners. The postscutellum or metanotum is always produced on the hind margin into a membranous lamella or into lamelliform teeth at the posterior lateral angles. Dorsum of epinotum with a mucro or median process at the base. Pygidial area defined in both sexes, triangular in the ♀, more or less trapezoidal in the ♂.

Forewing. Pterostigma distinct. The transverse cubital vein meets the radius before its middle. The large cubital cell is separated from the discoidal only by a *vena spuria*. Similarly, the second discoidal cell appears to be

obsolete, its boundaries being indicated only by faint traces of veins. The first submedial cell is much longer than the second and ends before the origin of the basal vein.

Hindwing. Radial vein very short, perpendicular to the costa. The retinaculum consists of five to eight hooks. Submedial cell short, ending well before the origin of the cubitus. Basal lobe oval.

Legs spinose; middle coxae far apart and sunk into the sternum. Claws unarmed. Punctuation usually much finer than in *Oxybelus*. In the ♂ there are seven visible sternites.

Nothing appears to be known about the life history of these insects, but it is probable that it is similar to that of *Oxybelus*.

Distribution: Palaearctic, Nearctic and Ethiopian Regions.

#### KEY TO THE SPECIES OF *BELOMICRUS* s.lat.

- (16) 1. Tergites 1-5, or 1-6 in the ♂, abruptly folded under at the sides, so that the ventral and dorsal portions of the tergites form a sharp edge at their junction; sternites flat.
- (15) 2. Flagellum short, all the joints excepting the first, second and last, as wide as, or wider than long. Mandibles edentate on the inner margin or with a dentiform angle at about the middle, the upper margin not dilated outwardly in the middle. Punctuation fairly fine and close, the surface usually dull.
- (4) 3. Pronotal collar with a subquadrangular median portion which is twice as wide as long and projects far beyond the almost linear side pieces. mirificus Kohl
- (3) 4. Pronotal collar of the usual shape.
- (12) 5. Mandibles excised on the outer margin. species-group *Oxybelomorpha* Brauns
- (11) 6. Epinotal process mucronate.
- (8) 7. Metanotal disc longitudinally carinate in the middle, without freely projecting posterior lobes, the posterior margin minutely excised in the middle. Tergites shining, not closely or finely punctured, the first two ferruginous. Kohli Brauns
- (7) 8. Metanotal disc not carinate in the middle, the lateral squamae projecting posteriorly as free rostriform or pyriform lobes. All the tergites black, or only the apex of the pygidium ferruginous.
- (10) 9. Shoulders of pronotal collar rectangular and almost dentate; pronotal tubercles pale yellow; metanotum between the squamae almost smooth. rhodesianus Arnold
- (9) 10. Shoulders of pronotal collar rounded; pronotal tubercles black; metanotum between the squamae clearly punctured. Turneri Arnold
- (6) 11. Epinotal process trapezoidal, wider at the apex than at the base, the apical margin very obtusely angularly emarginate (first five tergites in the ♀ fusco-ferruginous, with the sides and apical margins ferruginous; black in the ♂). Braunsi Kohl
- (5) 12. Mandibles not excised below on the outer margin. subgenus *Belomicrus* Ach. Costa, s.str.
- (14) 13. Epinotal process mucronate; scutellum as long as wide; metanotal squamae semicircular. Ferrieri Kohl
- (13) 14. Epinotal process canaliculate, the apical margin transverse and wider than the base; scutellum twice as wide as long; metanotal squamae bilobate posteriorly, the outer lobe rostrate. sordidus Arnold
- (2) 15. Flagellum long, the first six and the apical joints longer than wide, the rest as long as wide. Mandibles with a very large tooth at the basal third of the inner margin, the outer margin dilated above at about the middle, the basal third arcuately excised. Punctuation

sparse and coarse, the surface shining. Metanotal squamae large and ovate, epinotum with a short and acute mucro; median area of the clypeus bicornuate near the base.

subgenus *Nototis* Arnold, *bicornutus* Arnold

- (1) 16. Tergites not sharply folded under at the sides, the sternites not flat. Disc of metanotum subquadrangular, concave transversely and without lateral squamae; epinotum with a mucro.

subgenus *Brimocelus* Arnold, *radiatus* Arnold

Genus *BELOMICRUS*, subgenus *BRIMOCELUS* subgen. nov.  
(anagram, *Belomicrus*).

CHARACTERS. Eyes not widened below, the facets all equal in the ♀, slightly larger on the lower inner half in the ♂. Sculpture very delicate except on the epinotum. Median area of clypeus very much produced. Pronotal collar sunk considerably below the level of the mesonotum. Tergites not constricted at the base, without a sharp edge at the ventral fold. Sternites not flat. Epinotum without a distinctly defined median dorsal area. (Mandibles excised on the outer margin; metanotum with dilated lateral margins but without distinct and free squamae; epinotum with a small mucro.) Otherwise like *Belomicrus*. Type of subgenus, *B. radiatus* Arnold.

*B. (Brimocelus) radiatus* n.sp. (figs. 2 and 2 a-c).

♀. 3.5 mm. long. Black; first joint of the flagellum brownish above, its lower surface and the whole of the remaining joints ivory white. Tibiae and apices of the femora very pale yellow, the tarsi whitish, the pulvillus black. Apical third of the median area of the clypeus and the mandibles ochreous, the mandibles becoming reddish towards the black apex. Tegulae yellowish white. Wings milky hyaline, the veins pale ochreous. Apical margins of the second and third tergites at the sides, and the whole of the apical margins of the fourth and fifth tergites whitish, and sparsely covered with a white pubescence. Pygidial area blackish basally, flavo-ferruginous over the apical half (in another specimen it is entirely straw-yellow). Clypeus, lower half of the face, lower half of the temples and the mesopleurae with a very scanty, short and whitish pubescence. Otherwise glabrous, excepting the pubescence on the tergites. Head, pro-mesonotum, scutellum and disc of postscutellum shining, almost smooth, the sculpture consisting of a very superficial and microscopic rugulosity, which is chiefly longitudinal. Towards the posterior margin of the mesonotum it is somewhat stronger, forming short striae. The upper half of the head and the mesonotum have a few very shallow and minute punctures. Mesopleurae dull, transversely rugulose, the episternal suture deep; a transverse groove extends from the upper third of the episternal suture almost to the meso-metapleural suture. Metapleurae transversely striate; sides and declivity of the epinotum dull, very finely transversely rugulose and microscopically reticulate-punctate in between the rugae. Lateral portions of the metanotum dull and coriaceous, with a deep fovea on each side

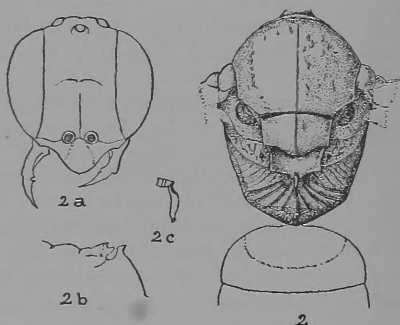


Fig. 2. *Brimocelus radiatus*, ♀, a, head; b, lateral view of posterior half of thorax; c, scape of ♂.

of the face, lower half of the temples and the mesopleurae with a very scanty, short and whitish pubescence. Otherwise glabrous, excepting the pubescence on the tergites. Head, pro-mesonotum, scutellum and disc of postscutellum shining, almost smooth, the sculpture consisting of a very superficial and microscopic rugulosity, which is chiefly longitudinal. Towards the posterior margin of the mesonotum it is somewhat stronger, forming short striae. The upper half of the head and the mesonotum have a few very shallow and minute punctures. Mesopleurae dull, transversely rugulose, the episternal suture deep; a transverse groove extends from the upper third of the episternal suture almost to the meso-metapleural suture. Metapleurae transversely striate; sides and declivity of the epinotum dull, very finely transversely rugulose and microscopically reticulate-punctate in between the rugae. Lateral portions of the metanotum dull and coriaceous, with a deep fovea on each side



close to the disc. Dorsum of epinotum in greater part dull, finely reticulate, with oblique rugae on the basal part; the apical portion has a high median carina continued from the base of the mucro and four equally strong carinae on each side which radiate fan-wise to a little below the brow of the declivity. The space between the carinae is slightly shining. Tergites almost dull, microscopically alutaceous, also very finely and not closely punctured. Sternites shining, finely rugulose.

Head as long as wide. Inner orbits of the eyes almost parallel, only slightly divergent below. Mandibles excised near the middle of the outer margin, the inner margin with two small teeth near the middle, the apex acute.

Median area of the clypeus much produced, its anterior margin strongly convex; in the middle it has a flattened triangular area the apex of which is continued into a low carina which extends to a little beyond the middle of the face; the lower half of the face feebly concave. Scapes fully half as long as the flagellum; the first joint of the latter subglobose, the second as long as wide, all the rest, excepting the apical joint, longer than wide. Ocellar area raised, the anterior ocellus sunken into a shallow pit. The posterior ocelli are three and a half times as far from each other as they are from the eyes, and twice as far as from the anterior ocellus. Pronotal collar low and short, only just visible when the insect is looked at from above. Mesonotum strongly convex in front. Mesonotum and scutellum with a median longitudinal carina, not easily visible except from a lateral aspect, owing to the polished surface. The suture between the mesonotum and scutellum is widened laterally. Lateral margins of the scutellum slightly convergent behind, ending there in a blunt angle; the hind margin convex. Metanotal disc large, concave transversely, raised upwards towards the posterior lateral angles which are rectangular; the posterior margin is curved obliquely towards the middle, where it is slightly projecting, bluntly bidentate and semicircularly excised between the teeth. Epinotal mucro acute, about one-quarter the length of the scutellum and not reaching the brow of the epinotal declivity. First tergite short, its declivous anterior face deeply hollowed out. Abdomen ovate, widest across the second tergite, the ventral folds of the tergites not sharp at the edge, the sternites convex transversely. Tibiae with fine whitish spines, the anterior metatarsus with irregular long spines which do not form a distinct comb.

♂. 3 mm. long. The yellow colour on the legs darker than in the ♀, and more extensive on the apical part of the femora; the posterior tibiae blackish below and at the sides, the last two or three joints of the tarsi smoky white. Mandibles fusco-flavous, black at the base and apex. Scapes blackish brown, dirty yellow on the inside of the apical third; flagellum blackish above, dirty white below. Tegulae testaceous on the margins, blackish inwardly, the axillary sclerite black.

Apical abdominal segment entirely black. The upper face, vertex and anterior half of the mesonotum have a shallow and sparse puncturation, but nevertheless much less sparse than in the ♀. The temples and sides of the epinotum are very finely reticulate-punctate, and the tergites are more deeply and a little more plentifully punctured than in the ♀. Clypeus less produced in the middle than in the ♀; inner orbits not parallel, slightly divergent above and below. Pygidial area triangular, wider at the base than long, the apex rounded. Otherwise like the ♀.

1 ♀, type, Ceres, C.P., November; 1 ♀, December; 1 ♂, type, Montagu, C.P., October; 1 ♂, Aliwal North, December (R. E. Turner).

Types in Brit. Mus. coll.

Genus *BELOMICRUS*, subgenus *NOTOTIS* subgen. nov.  
(*νῶτον* back, *ὠτός* (oîs) ear).

CHARACTERS. Mandibles with a large and acute tooth on the inner margin at about the basal third, the outer margin arcuately excised near the base and dilated outwardly above in the middle. Flagellum long, first six and the apical joints longer than wide. Puncturation sparse and fairly coarse, the surface shining. Metanotal squamae large, auriculate or ovate (shaped like a *Haliotis* shell). Abdomen very flat.

*B. (Nototis) bicornutus* n.sp. (figs. 3, 3 a and b).

♀. 4.2 mm. long. Black. Mandibles piceous, the middle third reddish yellow. A small transverse streak on the shoulders of the pronotum ivory white, the pronotal tubercles brownish ochreous. Tibiae brownish ochreous at the base, apex and on the outer side, elsewhere brown. Tarsi and extreme apices of the femora brownish ochreous. Metanotal squamae translucent and smoky white, their thickened edges and the apical third of the epinotal mucro, pale straw yellow. Wings hyaline, the veins brown. Clypeus and lower half of the face with a few silvery hairs; vertex, collar of pronotum, scutellum and margins of the metanotal squamae with a scanty, long and brownish yellow pilosity. The lower margins of the femora with a fringe of long thin hairs. Tergites with a scanty, pale brown and outstanding pubescence. The whole body, excepting the dorsum and declivity of the epinotum, is shining.

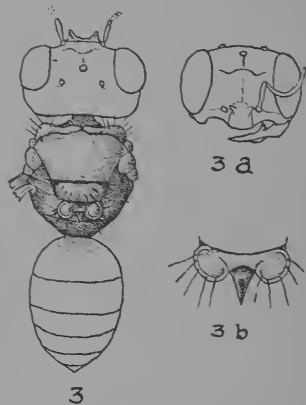


Fig. 3. *Nototis bicornutus*, ♀, a, head; b, metanotum and mucro, more highly magnified.

Sides of the clypeus and of the lower half of the face finely, shallowly and not closely punctured, the median parts smooth and impunctate. Upper half of the face, vertex and occiput coarsely and sparsely punctured, the punctures separated by many times their own diameter and largest near the inner margins of the eyes. Pronotal collar with a few large punctures. Mesonotum and scutellum polished, more sparsely punctured than the vertex, the scutellum shallowly impressed lengthwise in the middle. Mesopleurae almost impunctate. Lower half of the metapleurae and sides of the epinotum obliquely striolate. Dorsum and declivity of the epinotum irregularly rugose, the declivity somewhat reticulate rugose, with a median, shining and triangular fovea. Tergites very sparsely and irregularly punctured, the punctures of unequal size and not coarser on the first tergite than on the rest. Sternites smooth and impunctate. Head large, wider than long, somewhat wider than the thorax; the occiput and temples are well developed, the latter, viewed from the side, almost as wide as the eyes. Median area of the clypeus slightly produced, subquadrate, raised, the anterior margin transverse, armed on each side a little behind the middle with a transversely compressed, triangular and porrect horn. They are divergent and blunt at the apex. Scapes fairly long, as long as the first four joints of the flagellum, the first six joints and the apical joint longer than wide. Inner orbits slightly divergent above and below, the facets of the eyes of equal size. Ocelli arranged in a low isosceles triangle, the posterior pair twice as far from the anterior ocellus as they are from the eyes, their distance from the latter being equal to about one and a

half times their own diameter. Pronotal collar slightly below the level of the mesonotum, longer at the shoulders than in the middle, where it is impressed; the shoulders are rounded. Pronotal tubercles very prominent. Mesonotum twice as wide across the tegulae as long in the middle, and twice as long as the scutellum; the latter without raised lateral margins, impressed lengthwise in the middle. Metanotal squamae raised outwardly. Epinotal mucro short, acute, deeply excavated, directed obliquely upwards. Dorsum of epinotum not clearly delimited from the declivity. Tergites 1-5 much wider than long. Pygidial area triangular. Legs thin, the tibiae with thin spines on the upper surface, the anterior metatarsi feebly spinose and pubescent, but without a comb.

Thirty-eight miles east of Ceres, Little Karroo, November, 1 ♀ (R. E. Turner).

Type in the Brit. Mus. coll.

*B. (Oxybelomorpha) rhodesianus* n.sp. (figs. 4 and 4 a).

♀. 4.5 mm. long. Black; the following parts very pale yellow or yellowish white: the scapes excepting a brownish spot behind below the middle, the mandibles excepting the ferruginous apex, pronotal tubercles, all the tibiae, metatarsi and apices of the fore and middle femora. Tarsi pale brownish. The anterior and lateral margins of the metanotum, margins of the tegulae, a small spot on the metapleurae under the wings, a median longitudinal streak on the otherwise transparent and colourless metanotal squamae, and the epinotal mucro, pale yellow. Apex of the pygidial area dark reddish brown; the apical margins of the abdominal segments narrowly testaceous. First seven or eight joints of the flagellum dirty yellow below, brown above. Anterior margin of the clypeus ochreous. Wings hyaline, the veins dark brown.

Clypeus, face, temples and mesopleurae clothed with a short silvery pubescence; the rest of the head, pro-mesonotum and tergites with a thin whitish pilosity, a little more abundant on the tergites where it forms apical lateral fasciae. Median area of the clypeus smooth and shining. Lower face slightly concave, finely punctured and dull, excepting two longitudinal smooth and shining streaks on each side of the middle. Upper face, temples and vertex deeply and closely punctured, less closely and more strongly on the vertex than elsewhere, the depressed space between the eyes and posterior ocelli shining and sparsely punctured. Pronotal collar dull, finely and closely punctured above, the anterior and nearly vertical face closely striato-punctate. Epicnemium dull, closely and very finely punctured. Mesonotum, mesopleurae and scutellum dull, closely and fairly strongly punctured, the spaces between the punctures about as wide as the punctures and on the scutellum raised into ill-defined longitudinal rugae. Metapleurae finely and transversely striated. Epinotum dull, very finely reticulate-punctate, with a few rugae superimposed on the sides behind, on the dorsum and the declivity. The median portion of the metanotum, between the squamae, smooth and shining. Abdomen strongly and closely punctured above, slightly shining between the punctures, which become a little smaller towards the apex of the abdomen. The ventral surface is smooth and shining, with a few very shallow punctures, the fifth sternite more strongly punctured towards the apical margin. Pygidial area triangular, wider at the base than long, the apex rounded, strongly rugoso-punctate.

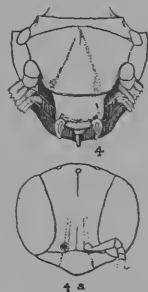


Fig. 4. *Belomicrus rhodesianus*, ♀, thorax; a, head.

Median area of the clypeus wider than long, with a flattened median triangular area the base of which is towards the rounded anterior margin. The face is narrowest well below the middle, at a point a little above the level of the antennal sockets. Scapes three times longer than wide at the apex, the first joint of the flagellum as long as wide at the apex, barely longer than the second which is also as long as wide; the remaining joints, excepting the last, wider than long. Posterior ocelli a little nearer to the eyes than they are to the anterior ocellus, two and a half times farther from each other than they are from the eyes. Temples wide above, rapidly narrowed below. Head a little narrower than the thorax; the latter is very wide across the mesonotum and is a little wider than long. Shoulders of pronotal collar rectangular and almost dentate; the dorsal face of the collar is shortest in the middle. Epinotum very large, its outer margin forming a sharp angle with the rest of the mesopleurae. The pronotal tubercles are flattened in front. Mesonotum two-thirds wider than long, triangularly and shallowly excavated in the middle, the base of the triangle on the hind margin and the apex reaching the anterior margin. Scutellum transverse, not quite twice as wide as long, almost parallel-sided, the posterior corners bluntly dentate, not carinate lengthwise in the middle. Metanotal squamae longer than wide, narrowed apically and incurved, wide apart, the distance between them being equal to the length of the scutellum. Epinotal process gutter-shaped, narrowed towards the blunt apex, the free part being about three times longer than wide at the base. Dorsum of the epinotum shorter than the median process.

First tergite feebly impressed lengthwise just above the declivous base. Second abscissa of the radius of the forewing two-thirds longer than the first.

♂. 3.5-4 mm. long. Scapes entirely pale yellow, tarsi pale straw-yellow, the last two joints slightly brown. Puncturation of the tergites stronger than in the ♀, especially on the sixth and seventh, which are very coarsely punctured; the seventh is trapezoidal, the apical half ferruginous. Otherwise like the ♀.

Sawmills, S.R., April (G. Arnold); 1 ♀, 16 ♂♂. (T.M. and R.M. colls., the types in the latter.)

*B. (Oxybelomorpha) Turneri* n.sp. (figs. 5 and 5 a).

♀. 4.7 mm. long. Black; mandibles dirty yellow, the apex reddish brown; scapes yellow at the apex in front; anterior and middle tibiae stramineous above, fuscous below, the posterior tibiae black, with the basal third above stramineous. Anterior tarsi brownish yellow, the middle and posterior tarsi brown. Tegulae and apical margins of the abdominal segments fusco-testaceous. Face and clypeus with a sparse silvery pubescence, temples and mesopleurae with a few short white hairs, abdomen above with a very short brownish grey pubescence.

Median area of the clypeus raised, with a flattened and smooth triangular space in the middle, the apex of which reaches to the level of the antennal sockets, the anterior margin moderately convex and having on each side an ill-defined angle. The rest of the clypeus is dull, very finely rugoso-punctate. Lower half of the face smooth and shining, excepting the sides and a triangular area at the base which are finely punctured. Upper part of the face, vertex and temples sharply and fairly closely punctured, the punctures increasing in size and distance apart posteriorly; the spaces between the punctures somewhat shining. A

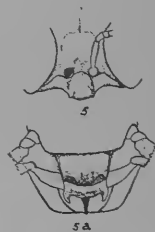


Fig. 5. *Belomicrus Turneri*, ♀, lower half of face; a, posterior half of thorax.

sharply impressed line extends from the anterior ocellus to the top of the smooth median area on the face. Between the posterior ocelli and the eyes the vertex is a little depressed and more sparsely punctured than elsewhere. Collar of pronotum closely and finely punctured, almost dull. The epinotum has a greasy lustre and is finely punctate-aciculate. Mesonotum and scutellum a little more strongly and more closely punctured than the vertex, moderately shining. Mesopleurae more strongly and much less closely punctured than the mesonotum, the episternal suture shallow; from the base of the latter a shallow groove extends to the base of the metapleurae. The mesopleurae are marginate all round. Metanotum shining, sparsely and very finely punctured. Metapleurae shining, strongly and transversely striate. Sides of epinotum nearly dull, closely and superficially rugoso-striate. Dorsum of epinotum and the declivity finely reticulate-punctate, the lateral areas of the dorsum and the whole of the declivity nitidulous and with transverse rugae superimposed; the median area dull and distinctly marginate. The declivity has a pyriform fovea below the brow. Tergites evenly and fairly closely punctured, rather strongly on the first and second where the puncturation is a little weaker than on the sides of the vertex, more feebly punctured on the three following segments, the pygidial area coarsely and sparsely punctured. The reflected margins of the tergites and the sternites are shining, very shallowly and finely punctured. Eyes divergent above and below, the interocular distance on the vertex equal to the length of the flagellum, and across the middle of the face equal to the length of the first six joints of the flagellum. The first joint of the flagellum is a trifle longer than wide, the second shorter than the first, as long as its apical width and as long as the third, the third to tenth distinctly wider than long. The distance between the posterior ocelli is twice as great as their distance from the eyes. Vertex large, its posterior lateral angles (upper part of the temples) widely rounded, the posterior margin of the head distinctly concave. Seen from the side, the temples at their widest are nearly as wide as the eyes. Pronotal collar very short, convex lengthwise and transversely, the shoulders rounded, impressed in the middle, the impression continued over the anterior third of the mesonotum. The latter is fully half as wide again across the tegulae as long in the middle. Scutellum marginate at the sides, transversely oblong, the posterior angles produced into short triangular teeth, the hind margin convex in the middle and concave on each side near the teeth.

Metanotum with the posterior half strongly declivous, the squamae on each side rostriform, their free apices about one-third of their whole length. Epinotal mucro short, elongate triangular, deeply excavated, subacute at the apex, about as long as the metanotal squamae. Abdomen oblongo-ovate, about half as long again as wide in the middle, the second to fifth segments much wider than long. Pygidial area triangular, as long as wide at the base, the apex rounded. Second abscissa of the radius almost twice as long as the first.

♂. 4.5 mm. long. The yellow spot on the scape larger than in the ♀, and like the yellow on the legs, of a brighter tint (lemon yellow) than in the ♀. Mesonotum and scutellum more strongly punctured than in the ♀. The apex of the mucro is feebly indented. Seventh tergite triangular, the apex widely truncate, the apical ventral valve feebly arcuately emarginate. Otherwise like the ♀.

Ceres, C.P., November (R. E. Turner), 16 ♀♀, 1 ♂. Types in the Brit. Mus. coll.



*B. (Oxybelomorpha) Kohli* Brauns (figs. 6, 6 a and b). *Ann. K.K.N.H. Mus. Wien*, XI, p. 475 (genus only). 1896. Kohl, *Konowia*, II, p. 184, ♀. 1923.

♀. 8.5 mm. long. Head and thorax black; mandibles excepting their black apices, and the base of the tegulae ferruginous. Pronotal tubercles and the posterior lateral angles of the metanotal disc, pale lemon yellow. First two abdominal segments above dark red, the rest piceous or black, with the apical margins fusco-ferruginous, the ventral surface piceous with brownish red apical margins to the segments. Femora black, the anterior tibiae and tarsi ferruginous, the former with a small flavous spot at the base. Middle and hind tibiae and tarsi reddish brown, the middle tibiae with a small flavous spot at the base, the posterior tibiae with a longitudinal streak of the same colour along the whole outer margin.

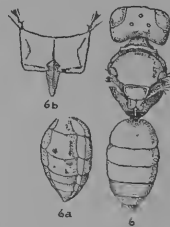


Fig. 6. *Belomicrus Kohli*, ♀; a, ventral view of abdomen; b, metanotum and mucro more highly enlarged.

Clypeus and lower half of the face clothed with short silvery pubescence, excepting a triangular area on the middle of the clypeus and two elongate triangular areas above the antennal sockets which are glabrous and shining.

The rest of the head has a sparse greyish pubescence. The thorax is almost glabrous, and the first five tergites have apical bands of dull silvery pubescence which are widely interrupted in the middle. Head dull, closely and strongly punctured, the punctures becoming larger and wider apart on the vertex and round the ocelli. Pronotum very finely and closely punctured, the wide epicnemium shining and almost smooth, the mesonotum, mesopleurae and scutellum strongly and fairly closely punctured, with faint traces of longitudinal rugae superimposed. Metanotal plate smooth and shining. Epinotum dull and obliquely striato-rugose above, irregularly rugose at the sides. Abdomen nitidulous, strongly and fairly closely punctured, the punctures largest on the basal segment, the apical margins of the segments closely and finely punctured, the pygidial area very coarsely punctured. Sternites slightly shining and punctulate. Outer margin of the mandibles excised near the middle, the inner margin with a very blunt tooth at about the middle. Anterior margin of the clypeus moderately convex, the median area raised posteriorly and with a triangular, smooth and flattened area in the middle. Antennae short, inserted close to the posterior margin of the clypeus, all the joints of the flagellum, excepting the first three and last, wider than long, the others a little longer than, or as long as wide. Eyes divergent above, the interocular distance on the vertex equal to about twice the length of the scape. The face is narrowest below the middle. Posterior ocelli nearly twice as far from each other as they are from the anterior ocellus, and nearly three times as far from each other as they are from the eyes. Vertex, occiput and temples large. Seen from the side the temples are as wide as the eyes at the middle, but are rapidly narrowed below that point. Collar of pronotum vertical in front, almost linear above, the shoulders dentate. Scutellum marginate at the sides, the raised margins ending posteriorly in a small tooth. Metanotal disc quadrangular, twice as wide as long, the sides reflected upwards, the posterior margin deeply excised in the middle, carinate longitudinally from the base to the apex of the excision, and transversely carinate on each side of the excision just in front of its posterior margin.

The epinotum has a short and narrow mucro which is hollowed out above, acute at the apex and twice as long as wide at the base. Abdomen

ovate, moderately convex transversely above; pygidial area wider at the base than long in the middle, rounded at the apex.

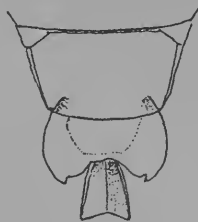
Port Elizabeth (Dr H. Brauns). Type in coll. Brauns.

*B. (Oxybelomorpha) Braunsi* Kohl (fig. 7). *Konowia*, II, p. 186, ♀, ♂. 1923.

♀. 5-6 mm. long. Black; basal half of the mandibles, pronotal tubercles, the inner half or less of the otherwise yellowish hyaline metanotal squamae, pale straw-yellow. Tergites ferruginous, the first five more or less fusco-ferruginous in the middle. Sternites brownish black. Tibiae pale yellow on the outer sides, the first pair reddish ochreous below, the middle and hind pairs fusco-ferruginous below, the extreme apices of the femora reddish ochreous, the tarsi brown. Tegulae testaceous; wings faintly fusco-hyaline, the veins brown. Anterior margin of the median area of the clypeus ferruginous. Sides of the face and of the clypeus with silvery pubescence. Vertex and occiput with a scanty yellowish pubescence. Tergites with sparse silvery pubescence at the sides. Face dull, closely punctured on the lower half of the sides, smooth and shining in the middle; the rest of the face, vertex and occiput strongly but not closely punctured, shining between the punctures. Mesothorax shining, the mesonotum coarsely punctured, chiefly in front and at the sides, the scutellum with a few large punctures on the anterior half and more closely punctured behind medially. Mesopleurae sparsely and coarsely punctured. Metapleurae transversely striate. Epinotum dull, reticulate-punctate, with a few rugae superimposed. Tergites with a deep and open puncturation, shining between the punctures, the first two more strongly punctured than the third to fifth. Pygidial area triangular, dull, closely and coarsely punctured, wider at the base than long, the apex widely rounded. Sternites slightly shining, finely punctate and rugulose. Median area of the clypeus with a shining triangular depression in the middle, the apex directed towards the posterior margin; the anterior margin has a blunt angle on each side.

Mandibles feebly excised on the outer margin near the base, the inner margin with a dentiform angle in the middle. Eyes amplified below, the facets of the enlarged portion larger than those elsewhere; the inner orbits divergent above and below. Posterior ocelli separated from the eyes by a distance equal to one and a half times the diameter of the ocellus; a shallow impression extends from them towards the eyes. The temples are separated from the smooth and shining mentum by a ciliated carina. Pronotal collar short, not much longer at the sides than in the middle. The median fifth of the mesonotum is shallowly and longitudinally impressed; scutellum barely more than one-third the length of the mesonotum, quadrangular, wider than long, not carinate in the middle, the posterior corners bluntly dentate. The metanotal squamae project very slightly behind and are not much raised at the sides. Epinotal process yellowish hyaline, except for an opaque cream-coloured streak in the middle, short, canaliculate, the apex feebly bilobate owing to a shallow and angular median excision. Abdomen oval, the tergites distinctly constricted at the base and strongly convex lengthwise. The upper half of the scape in front is sometimes pale yellow.

♂. 2.5-3 mm. long. Abdomen black, the apical margins of the tergites paler, the last tergite fusco-ferruginous at the apex. Middle and hind tarsi



7.

Fig. 7. *Belomicrus Braunsi*, ♀, scutellum, mesonotum and epinotal process.

and hind tibiae, excepting the yellowish base outwardly, blackish brown. Epinotal process parallel-sided, the apical margin only very shallowly arcuate. Otherwise like the ♀.

Willowmore, December (Dr H. Brauns); 38 miles east of Ceres, Little Karroo, November (R. E. Turner).

*B. (Oxybelomorpha) mirificus* Kohl (figs. 8 and 8 b). *Zeitschr. f. Hymen. und Dipt.* v, p. 225, ♀. 1905. *Konowia*, II, p. 194, ♀. 1923.

"♀. 4-4.5 mm. long. Head large. Occiput relatively very long, fairly deeply emarginate behind, compressed on both sides to a sharp keel. Occipital margin sharp. Mandibles long, almost falcate; the outer margin is not excised but bears an even row of long cilia. The median area of the clypeus is nasiform, carinate in the middle, the apex narrowly produced into a lobe whose anterior margin is feebly excised. The antennal sockets are farther from each other than they are from the eyes. The eyes are approximated below, the least distance between them lying at a point which is only just above the level of the antennal sockets, and is equal to the length of the scape or to nearly half the length of the face (the length of the face being measured from the anterior ocellus to the posterior margin of the clypeus). Scapes long. The median impressed line on the face, compared with other species in which such is present, is deep. The posterior ocelli lie on a line level with the posterior margin of the eyes. The second joint of the flagellum is smaller than the first, about as long as wide. The face and temples are covered with a dense decumbent pubescence. On the temples this pubescence ends abruptly at the line where they turn downwards to the mentum, thereby forming a rectilinear margin which is further emphasised by a row of long, thin and outstanding hairs. The shape of the pronotal collar is highly distinctive. Seen from above, it is formed by an almost cuboid middle piece which falls away vertically at the sides and in front. Posteriorly it extends outwards on each side as a narrow strip towards the pronotal tubercles with which it is fused. The anterior face with its acutely carinate lateral edges falls away obliquely to the sides. Mesonotum finely and fairly closely punctured, slightly shining, covered with a thin tomentum. Scutellum with sharp lateral margins. Mesopleurae clothed with silvery pubescence, the episternal suture nevertheless still visible. Metanotal squamae small, widely separated. Mucro acuminate. The sides of the epinotal dorsum transversely striate, the sides of the segment shining, striolate only above. First and second tergites with unusually fine puncturation, at least not distinguishable with a magnification of 10 diameters. The following tergites, apart from the insertion points of the hairs, are practically impunctate. Owing to the wide and deep impression of their anterior halves the second and third tergites appear strongly constricted. The fourth tergite also shows a trace of such a constriction. The pygidial area is equilaterally triangular and punctured. The lateral edges of the tergites at the folding are sharp, the sternites fairly flat. Metatarsus of the foreleg with a moderately long comb. Wings hyaline. Radial cell of the forewing lanceolate, the accessory cell small and not noticeable. Hindwing with six hooks in the retinaculum.

"Black. The following parts are ivory yellow: the mandibles, clypeus,

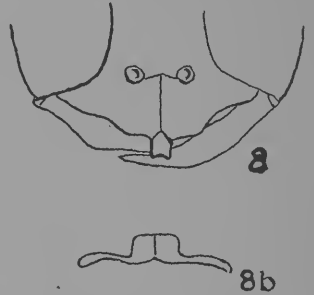


Fig. 8. *Belomicrus mirificus*, ♀, clypeus; a, pronotal collar (after Kohl).

scapes and pedicels, the pronotal collar above and the pronotal tubercles, the tegulae, posterior half of the scutellum, metanotum, epinotal mucro, bands on the tergites which become shorter and narrower towards the apex of the abdomen, the apical segment and the greater part of the legs. The band on the first tergite is very wide, and like the band on the following segment, touches the posterior margin. The band on the fifth tergite is reduced to a median spot near the basal margin. Sternites without yellow markings. A streak at the base of the fore and middle femora and the whole of the posterior femur are black. Calcaria whitish."

Abyssinia. Type in the Vienna Museum.

*B. (Belomicrus) sordidus* n.sp. (figs. 9, 9a and b).

♀. 4.6 mm. long. Black. Tibiae pale yellow above, blackish or brown below, their apices and apices of all the femora reddish ochreous. Fore and middle tarsi reddish ochreous, the posterior pair pale brown. Pronotal tubercles, posterior margin of the metanotal squamae and median apical portion of the epinotal process, pale straw-yellow. Mandibles brownish yellow, piceous at the apex. Tegulae testaceous, wings hyaline, the veins brown. Apical margins of the abdominal segments fusco-ferruginous.

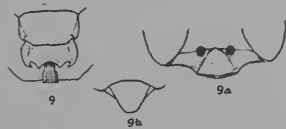


Fig. 9. *Belomicrus sordidus*, ♀, posterior half of thorax; a, clypeus; b, pygidium.

Face, temples and mesopleurae with a scanty, short and rather coarse, silvery pubescence. Tergites with a very short, yellowish pubescence, which is not conspicuous. Sides of clypeus dull, closely and finely punctured, the median area smooth and impunctate. Lower face closely punctured at the sides and just behind the middle of the clypeus, smooth and shining in the middle; upper face, vertex and temples strongly punctured, the punctures increasing in size upwards, and separated by spaces fully as wide as the diameter of the largest puncture. The lateral foveae on the vertex are not very distinct, the space between the posterior ocelli and the eyes and also behind the eyes less closely and more coarsely punctured and slightly shining. Pronotal collar dull, closely punctured. Mesonotum and mesopleurae as strongly and as closely punctured as the head and fairly dull. Scutellum longitudinally and shallowly rugose, punctured between the rugae, the punctures larger than those of the mesonotum. Metanotum smooth and shining. Metapleurae transversely rugose. Sides of the epinotum smooth and slightly shining below, dull and rugulose above; the declivity and dorsum dull, reticulate-punctate, with fine oblique rugae superimposed. Tergites 1-5 closely punctured, the first more coarsely than the following, but the punctures are smaller than those on the mesonotum. Second to fifth tergites constricted at the base, the first with a wide and shallow longitudinal impression in the middle of the upper part. Pygidial area subtriangular, about as long as wide at the base, sparsely and coarsely punctured, the apex widely rounded. Sternites shining, microscopically rugulose, the apical sternite with a few punctures at the sides. Prosternum and ventral surface of anterior coxae shining, very sparsely and shallowly punctured. Anterior margin of the clypeus slightly convex in the middle, shallowly concave on each side; the median area has a flattened triangular space. Eyes widened below, their inner margins divergent above and below, the least distance between them lies at the lower third of the face. Mandibles not excised on the outer margin. The posterior ocelli are a little more than twice as far from each other as they are from the eyes, their distance from the latter being equal to one and a half times the diameter of one ocellus. Occiput and temples well developed, the distance from the brow of the face

to the posterior ocelli being equal to the distance from the latter to the occipital margin. Pronotal collar impressed transversely in front of its posterior margin, not much shorter in the middle than at the shoulders, which are rectangular. Scutellum oblong and parallel-sided, twice as wide as long, the posterior angles rounded externally, slightly raised to form blunt teeth. Metanotal squamae suberect outwardly, the apex deeply bilobate, the outer lobe more acute than the inner and directed downwards. The outer and posterior margins are pellucid, the inner part adjacent to the black central disc, opaque and pale yellow. Epinotal process shorter than the metanotal disc, gutter-shaped, transversely truncate at the apex and slightly widened from the base to the middle, thence parallel-sided to the apex; its lateral margins are subvertical and the floor has a few fine transverse striae. Anterior femora broad and flattened, anterior metatarsi without a comb. Calcaria and spines on the legs pale ochreous. Second joint of the flagellum as long as the first.

♂. 4 mm. long. Sculpture of the mesonotum less dense and a little coarser than in the ♀. Disc of metanotum with a few transverse rugae. Pygidium trapezoidal, the apical half ferruginous. Otherwise like the ♀.

Aliwal North, C.P., January (R. E. Turner), 1 ♀, 1 ♂. Types in the Brit. Mus. coll.

*B. (Belomicrus) Ferrieri* Kohl (figs. 10 and 10 a). *Konowia*, II, p. 265, ♀, ♂. 1924.

"A species sufficiently distinguishable by its sculpture and the structure of the scutellum, postscutellum and hind femur."

"♀. 4.5 mm. long. Mandibles not excised on the outer margin; in the ♂ (perhaps also in the ♀) with a slight inward curve at the middle of the inner margin, almost giving the appearance of a small tooth. Median area of the clypeus somewhat gibbose, its anterior margin straight, shining, and with distinct lateral angles. The eyes are somewhat amplified below, therefore not regularly oval; the facets on the widened portion somewhat larger than those elsewhere. The least distance between the eyes lies slightly above the antennal sockets and equals four-sevenths of the length of the face. The frons has a median impressed line. The posterior ocelli are nearly three times as far away from each other as they are from the eyes. An oblique impression extends forwards from each of them towards the eyes. Head very closely and finely punctured, and in addition there is an exceedingly fine, fundamental alutaceous sculpture (resolvable under a magnification of 100 diameters). The smooth and shining lower surface of the head is separated from the temples by a ciliated carina. Clypeus and lower face with silvery pubescence, the latter with two smooth glabrous lines to accommodate the scapes. Pedicellus of the scape barely longer, but much thicker than the first joint of the flagellum. The larger median portion of the pronotal collar is clearly defined from the thinner lateral portions by lateral angles and also by its whitish yellow colour. Mesonotum with sparse and relatively large punctures, and like the head,

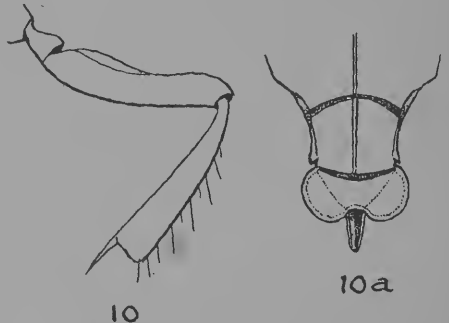


Fig. 10. *Belomicrus Ferrieri*, ♀, hind femur and tibia; a, scutellum, metanotum and mucro.



also with a fine fundamental alutaceous sculpture; the mesonotum has a distinct median longitudinal carina over its whole length, and there is also one on the scutellum. The latter has the posterior angles produced into blunt lappets, and its lateral and posterior margins are raised. Postscutellum semicircular, with two large and almost contiguous squamae. The epinotal mucro is fairly large and is narrowed towards the apex. Mesopleurae sculptured like the mesonotum. Episternal suture distinct. There is only a feeble suture between the mesopleurae and the mesosternum. Sides of the epinotum microscopically aciculate, fairly shining, and behind near the carina which separates them from the dorsum, distinctly rugose. Dorsum of epinotum dull, very finely rugose, near the base rugoso-striate. Abdomen oval, the tergites 2-4 constricted at the base. The first tergite is noticeably impressed near the base....Pygidial area triangular. The hind femora are peculiarly shaped, since seen from a certain position they appear to be enlarged at the base, and to a lesser degree also near the apex. Wings hyaline, the retinaculum of the hind wing begins at some distance from the origin of the radius.... The following parts are bright sulphur-yellow: the mandibles in greater part, the scapes and pedicellus, the pronotal collar above, with a slight interruption in the middle, the pronotal tubercles, the posterior halves of the metanotal squamae, the posterior half of the epinotal mucro, the tibiae and the tarsi. The latter are also partially brownish grey, and the tibiae have a brownish streak on the inner side.

"♂. 3.5-4 mm. long. In most examples the ♂ resembles the ♀ in colour and sculpture. The least width of the face is three-fifths of its length. The pronotal collar, unlike that of the ♀, is not remarkable; seen from above it is feebly arcuate."

Sunday River, C.P., December (Dr H. Brauns).

I identify with this species 2 ♀♀ and 4 ♂♂ from Oudtshoorn and Aliwal North (leg. R. E. Turner) in the British Museum collection. They agree so closely with the description given above that there can be no doubt that the identification is correct, but in that case the illustrations in *Konowia* are not very accurate, and I have therefore given new figures of the hindleg and metanotum, based on one of the specimens from Aliwal North.

#### Genus OXYBELUS Latr.

*Préc. car. génér. insect.*, p. 129. 1796.

*Notoglossa*, Dahlbom, *Hymen. Eur.* 1, p. 514. 1845.

CHARACTERS. Head as wide as the thorax. Mandibles not excised on the outer margin, the inner margin with an angular projection near the base. The eyes reach the base of the mandibles and are moderately divergent above and below, with the facets all equal. Ocelli arranged in a low isosceles triangle. Maxillary palpi 6-, labial palpi 4-jointed. Clypeus transverse, with a strong median longitudinal carina, which usually does not reach the anterior margin in the ♀, but in the ♂ projects beyond it as a tooth. In the ♂ there is also a distinct tooth on each side of the median one. Antennae 12-jointed in the ♀, 13-jointed in the ♂. The scapes are inserted close to the posterior margin of the clypeus and are about as far from each other as they are from the eyes. The flagellum is short, the joints, excepting the first three and last, always shorter than wide. The face is fairly flat and has two smooth impressions on the lower half to accommodate the scapes when laid back. Temples wide above, rapidly narrowing below. Pronotal collar very short, almost linear in the middle, nearly level with the mesonotum, its anterior face vertical. Mesopleurae strongly developed, very prominent, with a well-developed

epicnemium in front, and a trace of one behind. Episternal suture present. Mesonotum broad, sometimes with a faint median longitudinal carina on the posterior half. Scutellum and metanotum longitudinally carinate in the middle, both with lateral membranous lamellae; they are small on the scutellum but in the metanotum they are large and squamose, more or less rostrate, with the narrower apical portion projecting freely over the base of the epinotum, the apex usually bifid. The dorsum of the epinotum is visible only at the sides since the base of the epinotal process covers the greater part of the median field. The process varies in shape, it is sometimes canaliculate or gutter-shaped, or foliaceous, or mucronate. The declivity and lateral areas of the dorsum are sharply separated from the sides of the epinotum by a continuous and distinct carina. This carina is usually paler in colour and translucent and thereby rendered conspicuous. Abdomen subconical, usually widest across the second segment. The first and second tergites have a short lateral fold, the edge of the fold moderately carinate; the sternites are not flat. In the ♂ the 2nd-6th tergites have a spinous process on each side, and in one species, *acutissimus* Bischoff var. *propinquus*, these are also present in the ♀. Pygidial area triangular in the ♀, trapezoidal in the ♂. Eight ventral plates are visible in the ♂. Wings similar to those of *Belomicrus*, but the radial cell is not so lanceolate, and the indistinct accessory cell is therefore wider. Legs strongly spinose, the middle and hind tibiae with three rows of spines, middle tibiae with one spur, posterior femora slightly narrowed just before the apex and furnished at that point on the outside with one or more very short, thin spines. Middle coxae far apart and sunk into the sternum. A tarsal comb is well developed in the ♀, less so in the ♂. Last joint of all the tarsi swollen, pulvilli large, claws unarmed.

The species of this genus make their nests in sandy soil and provision their larvae with Diptera.

Distribution. Both hemispheres, but absent from the Australian region.

Including the new species described in these pages 23 recognisable species of this genus have been recorded from the Ethiopian region. Of many of them I have been able to examine very large series, and altogether have seen over 750 specimens distributed amongst 21 species. The study of this large amount of material has led to the following conclusions. Our species may be separated into three main groups according to the structure of the epinotal process. The genus exhibits very few plastic characters suitable for the differentiation of species, but of these the structure of the epinotal process is certainly one of the most valuable. Next in order of importance comes the shape of the metanotal squamae and then the punctuation of the mesonotum and tergites. However, in the group with a foliaceous epinotal process, the character of the punctuation is in the majority so uniform as to be of very little use for the separation of the species. On the other hand, many of the characters to which Kohl (*Gattungen der Sphegiden*) draws particular attention as being useful for that purpose are valueless in regard to our South African species. Such are, the distance of the posterior ocelli from the eyes, the length of the antennal joints, and for the majority of our species the width of the face in relation to its length. In regard to the first of these, the differences where they exist are too small to be of practical value, and the ratio of the width to length of the face is singularly constant. It is true that at first sight some species appear to have a wider face than others, but this is often due to an absolute greater size, and by measurement it will be seen that the proportions between length and width remain as usual. Likewise the structure of the pronotal collar is as a rule fairly constant, and the shape of the pygidial area in the ♀ is very much the same in most of our species. The character of

the sculpture of the epinotum is fairly uniform in the majority of our species and differences which may be present are generally of too subtle a nature to be made clear by verbal description and could be adequately illustrated only by microphotographs. For this reason no great emphasis has been laid on them in the descriptions which follow. The pattern of the pale spots and bands on the thorax and abdomen does vary to a moderate extent within each species, but within the genus it is far more constant than in many other genera of the Sphegidae, and the actual tint itself is also very constant. The colour of the axillary sclerite, which covers the extreme base of the costa and lies underneath the tegula, is very constant for the species, and at least

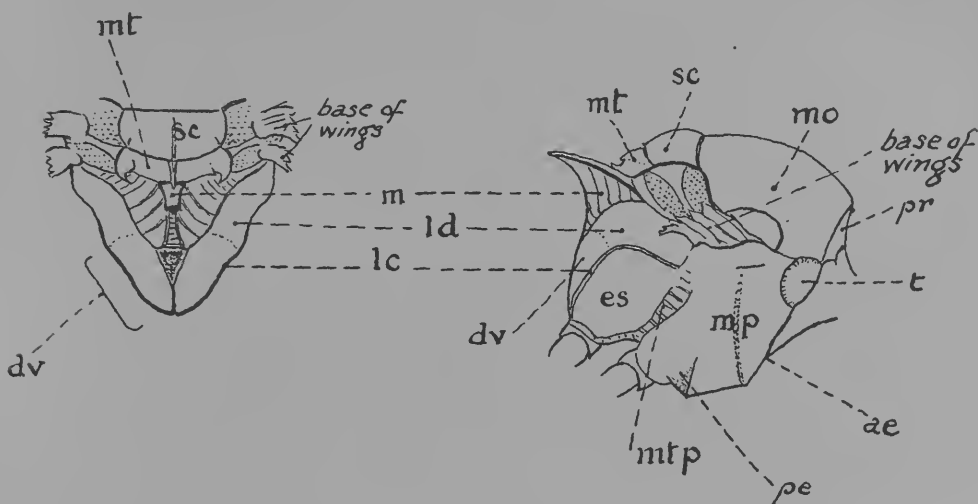


Fig. 11. Thorax of *Oxybelus*, slightly schematic. The figure on the left represents the posterior end of the thorax seen direct from behind, that on the right is the lateral view.

*pr*, pronotum; *t*, pronotal tubercle; *mo*, mesonotum; *ae*, anterior epicnemium; *pe*, posterior epicnemium; *sc*, scutellum; *mp*, mesopleurae; *mtp*, metapleurae; *mt*, metanotum or postscutellum; *m*, mucro of the epinotum, much foreshortened in the figure on the left; *ld*, lateral areas of the dorsum of the epinotum; *lc*, lateral carina of the epinotum; *es*, sides of the epinotum; *dv*, declivity of the epinotum, the upper limits of which are usually not clearly delimited by carinae or rugae from the lateral areas of the dorsum of the epinotum.

The central and more or less triangular space, obliquely striated, on each side of and below the mucro, represents the median area of the epinotal dorsum; it is continuous below with a sunken triangular area which is merely an enlargement of the median vertical groove of the declivity seen in other Sphegids.

in the group having a foliaceous epinotal process provides a diagnostic character which is fairly reliable. It should be noted that there are certain characters, which being generic and not specific, have not been considered in the following descriptions. These are, the striation or rugosity, intermixed with puncturation, which is to be seen on the occipital and temporal regions of the head, the fine reticulate-punctate sculpture of the depressed apical margins of the tergites, which are always of a paler colour than the rest of the segment, and bear a row of short and fine setae, and the minute excision at the apex of the pygidial area in the ♀. In the ♂ the apical margin of the pygidium is usually feebly concave, rarely quite straight.

KEY TO THE SPECIES OF *OXYBELUS*, ♀♀

- A. Epinotal process mucronate, *i.e.* spiniform, with the upper surface hollowed out.
- (2) 1. Large species, 11 mm. long or more. imperialis Gerst.
  - (1) 2. Smaller species, less than 9 mm. long.
  - (4) 3. Mucro very short, triangular, only slightly longer than wide at the base; sternites 1-4 yellow; 8 mm. long. flaviventris Arnold
  - (3) 4. Mucro at least one and a half times longer than wide at the base; sternites black.
  - (6) 5. Punctuation sparse, surface of mesonotum, scutellum and tergites shining; tergites without lateral spines, the first only shallowly impressed lengthwise in the middle; punctures on the mesonotum widely separated; head and abdomen with a brassy tinge; tegulae in front and axillary sclerite yellow. paucipunctatus Arnold
  - (5) 6. Punctuation closer, mesonotum and scutellum dull; head and abdomen without a brassy tinge; tergites with lateral spines; the punctures of the mesonotum almost contiguous; tegulae fusco-testaceous, axillary sclerite blackish. acutissimus Bischoff, var. propinquus Arnold
- B. Epinotal process canaliculate or gutter-shaped, the apex more or less deeply excised and therefore bilobate or bidentate at the apex, the lateral margins always reflected upwards to some extent. (N.B. In some species the process is so wide and shallow that it might be regarded as coming under category C, but in the latter the lateral margins are not reflected upwards.)
- (18) 7. Epinotal process almost parallel-sided or with slightly concave sides, not much wider or narrower just behind the apical excision than at the base.
  - (11) 8. Lateral areas of the epinotal dorsum clothed with a dense pubescence which obscures the sculpture. Tergites with distinct apical bands of pubescence.
  - (10) 9. Pubescence silvery; head and body almost entirely black, the first four tergites with very narrow preapical bands of yellow, widely interrupted in the middle and often absent from the first and fourth. matabele Arnold
  - (9) 10. Pubescence golden; pronotal tubercles and spots on the scutellum yellow, first four tergites with conspicuous preapical yellow bands, narrowly interrupted in the middle on the first and second tergites. Braunsi Arnold
  - (8) 11. Lateral areas of the epinotal dorsum not obscured by dense pubescence; tergites without distinct apical fasciae of pubescence.
  - (17) 12. Sixth abdominal segment ferruginous, axillary sclerite ferruginous or reddish ochreous.
  - (14) 13. Face as wide at its narrowest point as long in the middle (fifth tergite black, with a yellow transverse band which is narrowed in the middle). natalensis Arnold
  - (13) 14. Face narrower, distinctly longer than wide.
  - (16) 15. Fifth abdominal segment more or less ferruginous. Femora in greater part ferruginous; metanotum, excepting the outer halves of the squamae, pale yellow. ruficaudis Cameron
  - (15) 16. Fifth abdominal segment black (the sixth sometimes fusco-ferruginous). Femora black excepting the apex; middle part of the metanotum usually black. ruficaudis var. melanarius Arnold
  - (12) 17. Sixth abdominal segment black; axillary sclerites blackish on the inner half, pale yellow on the outer. Peringueyi Sauss.
  - (7) 18. Epinotal process distinctly widened towards the apex, clearly wider just behind the apical excision than at the base.

- (20) 19. Abdomen shining, finely and sparsely punctured above; pygidium pale yellow; 4.5 mm. long. *limatus* Arnold
- (19) 20. Abdomen dull, closely punctured; pygidium black or fusco-ferruginous.
- (22) 21. 4.3 mm. long. Punctures on the second tergite about as large as those on the first, much larger than those on the third. Pygidial area fusco-ferruginous at the base, paler at the apex; yellow fasciae on the third to fifth tergites narrow, widely interrupted in the middle, and on the fifth confined to the apical fourth of the segment. *flavicornis* Arnold
- (21) 22. 7 mm. long. Punctures on the second tergite smaller than on the first, and not much larger than those of the third; pygidial area black. Yellow bands on the abdomen broad, entire on the third to fifth, and on the fifth covering nearly the whole of the segment. *willowmorensis* Arnold
- C. Epinotal process foliaceous, ovate, ovate-lanceolate or lanceolate, excised at the apex and carinate longitudinally in the middle.
- (24) 23. Median area of the clypeus with a subquadrate nasiform protuberance, extending from the base to about the middle, its upper surface nearly flat, its anterior margin bluntly angular. *nasutus* Bischoff
- (23) 24. Clypeus carinate or tuberculate.
- (26) 25. The carina on the clypeus ends before the middle in a short and acute spine (all the tibiae and tarsi and the pale marks on the thorax and first four tergites pale straw-yellow, the tibiae also with a slightly pink tinge). *pallidus* Arnold
- (25) 26. The carina on the clypeus not ending in a free spine, usually thickened in its middle or at its end to form a blunt tubercle.
- (28) 27. Epinotal process lanceolate, long and narrow, twice as long as its greatest width, the apex angularly emarginate, the apical teeth acute, blackish in the middle basally, ferruginous beyond, with the sides and apex paler and yellowish. *angustus* Saussure
- (27) 28. Epinotal process not lanceolate, much less than twice as long as its greatest width.
- (32) 29. Apical excision of the epinotal process angular, wider than deep, the apical teeth acute. Pygidial area black.
- (31) 30. Middle and hind femora black with yellow markings; abdominal bands pale lemon yellow, on the third to fifth entire, on the fifth rectangular and covering nearly the whole of the tergite; axillary sclerite blackish in the middle and pale yellow marginally. Epinotal process beyond the base fairly flat and nearly parallel-sided. *aethiopicus* Cameron
- (30) 31. Middle and hind femora ferruginous, abdominal bands chrome yellow, all widely interrupted in the middle, the fifth tergite immaculate; axillary sclerite blackish all over. Epinotal process distinctly tumid at about the middle, the sides clearly convex. *curviscutis* Arnold
- (29) 32. Apical excision of the epinotal process more or less semicircular or semi-elliptical, the apical teeth rounded (pygidial area black or ferruginous).
- (34) 33. Abdominal bands cream-coloured; pygidial area black, as long as wide at the base (epinotal process rugose, the rugae coarse and nearly parallel to the median carina). *lingula* Gerst.
- (33) 34. Abdominal bands chrome yellow; pygidial area ferruginous, longer than wide at the base.
- (36) 35. Middle and hind femora black, posterior metatarsi blackish, and fusco-ferruginous apically. Epinotal process unevenly rugose, the rugae oblique, the apical excision deep and angular. Pygidial area hardly more than one-fourth longer than wide at the base, clothed with yellowish white setae. *rubrocaudatus* Arnold



- (35) 36. Middle and hind femora ferruginous or fusco-ferruginous, the posterior metatarsi stramineous. Epinotal process very finely and evenly striate, the apical excision shallow and round. Pygidial area one-third longer than wide at the base, clothed with golden setae.  
*lepturus* Arnold

### KEY TO THE SPECIES OF *OXYBELUS*, ♂♂

- A. Epinotal process mucronate, *i.e.* spiniform, with the upper surface hollowed out.
- (2) 1. Mesonotum and last two abdominal segments ferruginous; mucro long and narrow, almost as long as the scutellum and disc of metanotum united. *Stevensoni* Arnold
  - (1) 2. Mesonotum black.
  - (4) 3. Tergites dull, closely and coarsely punctured. Legs ferruginous in part, scutellum entirely black, axillary sclerite and last abdominal segment ferruginous. *flaviventris* Arnold
  - (3) 4. Tergites more or less shining, finely punctured. Legs black and yellow, scutellum with yellow markings, axillary sclerite black with the margins yellow or entirely yellow. Last abdominal segment black.
  - (6) 5. Axillary sclerite entirely pale chrome yellow, first three tarsal joints pale yellow; tergites shining, very shallowly and finely punctured, the first only feebly impressed longitudinally in the middle. *paucipunctatus* Arnold
  - (5) 6. Axillary sclerite black, its margins pale ochreous, first three tarsal joints brownish or reddish yellow; tergites not noticeably shining, finely but fairly sharply punctured, the first with a deep longitudinal impression. *acutissimus* Bischoff, var. *propinquus* Arnold
- B. Epinotal process canaliculate or gutter-shaped, the apex more or less deeply excised; it is sometimes very shallow but at least the lateral margins are reflected upwards.
- (16) 7. Epinotal process not much wider or narrower just behind the apical excision than at the base.
  - (9) 8. Body entirely black, the tergites with apical bands of silvery pubescence, finely and very closely punctured. *matabele* Arnold
  - (8) 9. Body with yellow markings, at least the first tergite coarsely punctured.
  - (11) 10. Spots and bands on the body pale straw-yellow, almost cream-coloured; anterior margin of the clypeus feebly bidentate on each side of the deep median emargination (scapes black). *solitarius* Arnold
  - (10) 11. Markings on the body chrome yellow; anterior margin of the clypeus tridentate.
  - (13) 12. Metanotum black, two-thirds as long (in the middle) as the scutellum; the latter subquadrangular, the posterior margin nearly straight, its yellow markings very small. *natalensis* Arnold
  - (12) 13. Metanotum yellow, less than half as long in the middle as the scutellum; the latter almost semicircular, with large yellow spots, only the posterior margin and a narrow line in the middle are black.
  - (15) 14. Sixth and seventh abdominal segments red; axillary sclerite reddish yellow, scapes yellow. *ruficaudis* Cameron
  - (14) 15. Sixth and seventh abdominal segments black; axillary sclerite pale chrome or ochreous yellow, scapes blackish. *Peringueyi* Saussure
  - (7) 16. Epinotal process distinctly wider just behind the apex than at the base.
  - (18) 17. First and second tergites more finely punctured than the mesonotum; scapes black, flagellum excepting the first joint dark brown above, brownish yellow below; axillary sclerite chrome yellow. *limatus* Arnold
  - (17) 18. First and second tergites with punctures as large as, or larger than, those of the mesonotum; scapes bright yellow, flagellum pale ochreous

or pale orange yellow, the basal joints brownish above; axillary sclerite blackish with ochreous margins.

- (20) 19. Posterior femora black basally; apical joint of the flagellum darker than the other joints; scutellum twice as long as the disc of the metanotum; metanotal squamae as long as the epinotal process (measured along the middle); the latter in the middle is as long as its greatest width, which is near the apex. *flavicornis* Arnold
- (19) 20. Posterior femora fusco-ferruginous; flagellum concolorous; scutellum only half as long again as the disc of the metanotum; metanotal squamae only a little more than half as long as the epinotal process; the latter in the middle is a little more than half as long again as its greatest width which is at about the basal third.  
*flavicornis*, race *nyassae* Arnold

C. Epinotal process foliaceous, lanceolate or elongate ovate, the apex excised.

- (22) 21. Epinotal process at least three times longer than its greatest width.  
*angustus* Saussure
- (21) 22. Epinotal process shorter.
- (28) 23. Seventh abdominal segment, and sometimes also the sixth, ferruginous.
- (25) 24. Epinotal process long, three-fourths longer than its greatest width, which is at the basal third, the apex shallowly and roundly excised.  
*pallidus* Arnold
- (24) 25. Epinotal process shorter, at the most only half as long again as its greatest width, which is at the middle, the apex deeply and angularly excised.
- (27) 26. Hind femora black, their apices yellow; flagellum dark brown above, brownish red below; sternites entirely black. *rubrocaudatus* Arnold
- (26) 27. Hind femora ferruginous; flagellum pale ferruginous; second and third sternites with preapical streaks of yellow on each side.  
*lepturus* Arnold
- (23) 28. Sixth and seventh abdominal segments black, the apex of the seventh sometimes fusco-ferruginous.
- (32) 29. Epinotal process a little more than twice as long as its greatest width, or nearly so; hind femora black and yellow.
- (31) 30. Median area of the epinotum wide, clearly defined all round by a high raised border, the enclosed space with three or four oblique, widely spaced and strong carinae on each side, the spaces between them shining; tergites closely and rather finely punctured, dull; axillary sclerite blackish; yellow marks on the legs and body pale lemon yellow.  
*aethiopicus* Cameron
- (30) 31. Median area of the epinotum narrow, less clearly defined than in *aethiopicus*, the enclosed space with feeble rugae fairly close together, the spaces between them not distinctly shining; tergites 1 and 2 coarsely punctured, shining between the punctures, which on the first are not very close together; axillary sclerite pale yellow; markings on the legs and body chrome yellow.  
*lingula* Gerst.
- (29) 32. Epinotal process distinctly less than twice as long as its greatest width; hind femora ferruginous.  
*curviscutis* Arnold

*O. imperialis* Gerstaecker (figs. 12 and 12 a). *Zeitschr. f. d. ges. Naturw.* xxx, p. 24, nota, ♀. 1867.

♀. 11.5 mm. long. One of the largest species in the genus. Black; scapes fusco-ferruginous below, a small spot of yellow on the front of the tegulae. First four tergites with subquadrangular chrome yellow maculae on each side, extending from the base to just in front of the narrowly depressed apical margins; their transverse extent is such that only a quarter of the width of the tergites is black in the middle. The fifth tergite has a small spot of yellow on each side close to the lateral margin. Inner side of the anterior tibiae and

apical joints of all the tarsi ferruginous. Wings hyaline, the veins black. Clypeus, vertex, mesonotum and apical margin of the fifth tergite with a very short black pubescence, the face with silvery pubescence which ends a little below the anterior ocellus.

Clypeus dull and punctured at the sides, the middle with a broad tubercle at the base, below which the surface is concave, smooth and shining; the anterior margin of the median area transverse and with a feebly angular prominence at the middle. Upper part of the head, from the margin of the

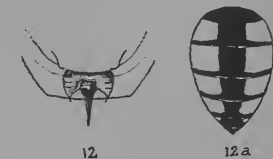


Fig. 12. *Oxybelus imperialis*, ♀, posterior half of thorax; a, abdomen.

pubescent area to the posterior ocelli, closely punctured and dull, beyond the posterior ocelli the punctures are larger and more widely separated, the spaces between them shining. Occiput and temples moderately shining and striate-punctate. Mesonotum, mesopleurae and scutellum strongly punctured, shining between the punctures, the scutellum more coarsely and less closely punctured than the mesonotum. The latter, however, is somewhat less closely punctured on each side of the middle towards the base, and has a median longitudinal carina extending over the posterior fourth. Scutellum strongly carinate lengthwise in the middle, two and a half times wider than long. Metapleurae and sides of the epinotum finely and transversely striate, moderately shining. Metanotal squamae thick, almost triangular, the apex incurved and acute, the margins raised, with a few transverse carinae. Epinotum armed with a narrow and acute mucro, excavated at the base, two and a half times longer than wide at the base. Tergites 1-5 shining, the first irregularly and fairly coarsely punctured, the punctures hardly as large as those of the mesonotum. The second to fourth tergites sparsely and coarsely punctured on the yellow areas, more finely and more closely punctured on the median black area, the depressed apical margins of all the tergites closely and finely punctured. Fifth tergite closely and finely punctured at the base, sparsely and coarsely on the apical half. Pygidial area triangular, longer than wide at the base, longitudinally striate. Fine black hairs arise from the punctures on the tergites, and the pygidial area is covered with brownish black setae. Sternites shining, the second sparsely and coarsely punctured. Face almost as wide in the middle as long (measured from anterior ocellus to the posterior margin of the clypeus). Anterior metatarsi with six spines on the outer margin. Spines on the legs black.

Lady Grey, C.P., February (R. I. Nel), 1 ♀.

The type of this species in the Berlin Museum was collected by Drège, and with the exception of this single specimen from Lady Grey, C.P., does not appear to have been taken by any other collector during the last 59 years. Considering its size and distinctive colouring, on account of which it has been so aptly named by Gerstaecker, this striking insect can hardly have been overlooked, and the absence of records is no doubt due to its rarity.

*O. flaviventris* n.sp. (figs. 13 and 13 a-e).

♀. 8 mm. long. Black; anterior margin of the median area of the clypeus, femora and tibiae ferruginous, the posterior femora slightly blackish below. The following parts are chrome yellow: collar of pronotum including the upper fourth of its vertical face, pronotal tubercles, metanotum, middle and hind coxae, trochanters and an oblong spot at the base of the middle femora below, the upper side of the posterior tibiae, lateral spots on the first five tergites, the first four sternites excepting their brownish apical margins, a lateral mark on the first, and the apical margin of the fifth sternite. Pygidium

fusco-ferruginous. Antennae excepting a yellow streak on the front of the scapes, the tarsi and tegulae pale flavo-ferruginous, some of the tarsal joints paler at the base. Metanotal squamae nearly colourless and translucent, traversed by four opaque streaks. Calcaria and spines on the legs ferruginous. Wings hyaline, veins and stigma dark brown. Face and temples with a short silvery pubescence; elsewhere there is a fine greyish pubescence, scanty, but somewhat denser on the abdomen, lateral areas of the epinotal dorsum and lateral trabeculae of the scutellum, nowhere very conspicuous. Head and mesothorax dull, closely and fairly strongly punctured. Metanotum coarsely punctured, the squamae broad, upturned at the base, the apex produced into a fine point and not bifid. Scutellum and metanotum longitudinally and feebly carinate in the middle. Epinotum with a fundamental and very fine reticulate puncturation, the lateral areas of the dorsum and of the declivity dull, the former with a few irregular rugae superimposed; the median area of the dorsum is slightly shining, obliquely rugose on each side and reticulate rugose below the mucro. Sides of epinotum dull, finely and transversely rugose. The mucro is shaped like a deeply hollowed-out half-cone, and is a little longer than wide at the base, fairly short, or about two-thirds the length of the scutellum. First tergite strongly punctured, the punctures separated by spaces which are about twice as large as the largest puncture. Second tergite more closely punctured, the largest puncture hardly half as large as those on the first, shining between the punctures. Third and fourth tergites more finely, the fifth more coarsely punctured than the second, the fifth sparsely covered with long, yellowish setae; pygidial area clothed with reddish golden hairs, elongate triangular, about one-sixth longer than wide at the base. Second sternite shallowly and fairly strongly punctured, the third to fifth on the basal halves and the sixth on the apical half sparsely and very coarsely punctured. Clypeus with a high cariniform tubercle at the base, the anterior margin slightly produced in the middle and with a low tooth on each side some distance from the middle. Face wide, narrowest in the middle, at which point it is as wide as long. Second and third joints of the flagellum longer than wide, and of equal length. Posterior ocelli separated from the eyes by a distance equal to one and a half times their own diameter. Pronotal collar very short, hardly longer at the blunt lateral angles than in the middle. Mesonotum one-third wider in front than long in the middle, a trifle more than twice as long as the scutellum. Yellow maculae on the first four tergites not large, and on the first three confined to the outer thirds of the segments. Anterior metatarsi with six spines on the outer margin.

♂. 6.3 mm. long. The median area of the clypeus has the anterior margin ferruginous only in the middle, in the space between the teeth. Flagellum brownish red above, darker basally, pale reddish ochreous below, the whole of the apical joint black. Anterior tibiae ferruginous, with a pale yellow streak over the whole upper surface. Hind tibiae ferruginous inwardly, with a small yellow spot at the base above, the outer side blackish. Yellow markings on the tergites smaller than in the ♀.

The first tergite with a subtriangular spot on each side, the second to fifth with pre-apical transverse bands attenuated medially and very widely

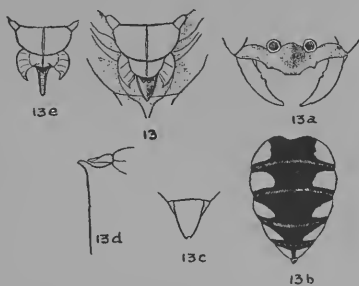


Fig. 13. *Oxybelus flaviventris*, ♀, posterior half of thorax; a, clypeus; b, abdomen; c, pygidium; d, lateral view of epinotum; e, scutellum, etc., of ♂.

interrupted in the middle. These bands become thinner on each succeeding segment so that on the fifth the yellow is barely visible. Sixth tergite entirely black, the seventh ferruginous. The second to sixth sternites with very narrow apical bands of pale dull yellow. The tergites have no lateral teeth. Coxae and trochanters black, middle femora without a yellow streak below. Otherwise coloured like the ♀. Punctuation of the tergites stronger than in the ♀, the punctures on the third and fourth not much smaller than on the second; sternites slightly shining, the second shallowly and fairly coarsely punctured, with a longitudinal rounded ridge on each side which ends in a slight boss before the apical margin, the third and following sternites finely and fairly closely punctured. Median area of the clypeus strongly carinate, the anterior margin sharply tridentate, the median tooth being formed by the end of the projecting carina, the margin between it and the lateral teeth deeply concave. Face one-third longer than wide in the middle. Metanotal squamae longer and broader at the base than in the ♀; the epinotal mucro is narrower, longer and more attenuated apically than in the ♀, fully twice as long as wide at the base, the apex narrowly rounded. Pygidial area trapezoidal, the apical margin feebly concave. Otherwise like the ♀.

Bulawayo, November, 1 ♀ (G. Arnold); 1 ♂, December (R. H. R. Stevenson). The type of the ♀ in the R.M. coll., of the ♂ in coll. Stevenson.

*O. acutissimus* Bischoff. *Ergeb. Deutsch. Zentral Afr. Exped.* III, p. 226, ♀. 1911.

“♀. 4.75 mm. long. Black. The mandibles, excepting their apices, are yellowish brown. The last joints of the antennae are also brown. The following parts are whitish,—a band broken in the middle on the pronotum, the pronotal tubercles, the metanotal squamae, the extreme tip of the mucro, and lateral spots on the first and second tergites; the spots on the third and fourth tergites are bright sulphur-yellow. Two spots on the scutellum and the tegulae are yellowish brown. The anterior tibiae and tarsi are dirty yellowish brown; a white streak of variable extent lies on the inner upper edge of the middle and hind tibiae. The apical spines of the tibiae are also white. The last joints of the tarsi are fairly large and brownish yellow. The pubescence is silvery grey. The clypeus and inner orbits silvery. The pale apical margins of the sternites are fringed with hairs, and there are longer silvery grey hairs in between. The pygidial area is covered fairly densely with yellowish golden hairs. The whole head is evenly, closely and fairly coarsely punctured, and the temples are distinctly marginate. Mandibles of normal form. The clypeus bears several small teeth. The antennae are short and stout, and the joints of the flagellum, excepting the last, are of about equal length. The eyes converge fairly strongly below. The cheeks are very short. The ocelli are arranged in a low triangle. The punctuation of the mesonotum is close and clearly coarser than that of the head, of the mesopleurae coarse, confluent and rugose. The scutellum is sculptured like the mesonotum, and is sharply carinate longitudinally in the middle. This carina is continued over the metanotum which is produced at the sides into two projecting squamae, and thereby appears widely and deeply emarginate, although somewhat produced in the middle by the end of the median carina. The sculpture of the epinotum is very distinct, since all the rugae are much raised and the punctuation of the enclosed spaces is weak. The mucro is deeply excavated above, and drawn to a fine point at the end. It is obliquely curved upwards. The legs are of a normal shape; on the outer edge of the hind tibiae there are six distinct tubercles, from each of which arises a fairly

strong pair of setae. The apical joints of the tarsi are relatively much enlarged. The pulvilli are very large, longer than the claws.... The first to fourth tergites are fairly equally densely punctured. On the basal half of the first tergite the punctures are closer and finer. The first tergite is impressed lengthwise in the middle, but the impression, which is very deep on the horizontal face and the brow of the declivity, is almost obsolete on the declivous anterior face. The impression does not reach the apical margin of the segment. In front of the apical margins of all the segments the puncturation is closer and is also inclined to become rugulose. The fifth tergite is more closely punctured than the preceding tergites and is also somewhat rugose, like the anal segment, in which, however, the punctures are much larger. The first sternite is entirely punctured, the rest only on their posterior halves."

Awakubi, on the Aruwimi, west of Lake Albert, April. Type in the Berlin Museum.

By the courtesy of Dr Bischoff I have had the opportunity to examine the type of this species. The parts which are described as being "whitish" appear to me to have been originally yellow and have been discoloured from some cause or other, probably through immersion in alcohol. I cannot see on the clypeus the several small teeth mentioned in the text, but the ragged edge of the pubescence on that part might suggest the presence of such structures.

*O. acutissimus*, var. *propinquus* v. nov.

♀. 6 mm. long. Larger than the type of the species, and stouter, the thorax and abdomen relatively wider. The yellow spots on the third and fourth tergites in the type, which do not appear to have lost their original tint, are nevertheless much paler than in this variety, where they are of a bright chrome yellow, like the spots on the rest of the tergites. The fifth tergite has a yellow spot on each side (absent in the type), and all the abdominal markings are larger than in the type. The sculpture is deeper, and on the abdomen somewhat denser. The mucro is longer, less acute than in the type of the species, and resembles that of *O. paucipunctatus* Arn. The second to fifth tergites are exceptional, since they have lateral apical teeth almost as well developed as those of the ♂. They are also to be seen in the type of the species, but there they are very small. Tegulae brownish yellow, axillary sclerite blackish, as in the type of the species. The yellow markings on the legs are larger, and the upper side of the posterior femora, excepting the extreme apex, is bright lemon-yellow. The tarsi are fusco-ferruginous, with the basal joint darker.

♂. 4.3–6 mm. long. Tarsi ochreous, including the last two joints. Anterior tibiae reddish yellow below, the hind tibiae with a black streak below. Pubescence of the face and clypeus brassy golden. The yellow spots on the scutellum are smaller than in the ♀, and the apical portion of the mucro is piceous. The paler parts of the flagellum are darker than in the ♀, or reddish ochreous; the scapes are often ochreous only at the apex in front. Mandibles reddish ochreous, piceous at the apex, black at the base. Otherwise like the ♀ in colour, pubescence and sculpture. The lateral teeth of the tergites are stronger than in *paucipunctatus* ♂. The apex of the mucro is less rounded than in that species, and the mucro is relatively longer.

Sawmills, Khami, Bulawayo, S.R., October–December, common; Pietersburg, Transvaal, October (R. H. R. Stevenson).

Types in R.M. coll. (R.M. and T.M. colls.).

*O. paucipunctatus* n.sp. (figs. 14, 14 a and b).

♀. 5-6 mm. long. Closely related to *acutissimus* but with a very different sculpture. In coloration it differs from that species as follows. The black, especially on the abdomen, has a faint brassy tinge. The scapes are black, with an elongate patch of lemon yellow in front at the apex. The flagellum is dark brown at the base (somewhat paler below), and becomes gradually paler towards the apex so that the seventh and following joints are almost entirely reddish ochreous. The anterior tarsi and the underside of the anterior tibiae are reddish yellow, the upper side of the latter lemon yellow. The middle and hind tarsi are brownish yellow, with the apical joint darker. The apex of the middle and hind femora, and a streak on the under side of the former, are pale whitish yellow; the middle and hind tibiae are also of that colour but have a brownish streak below. Tegulae pale yellow in front, brown behind. The first five tergites have apical bands of lemon yellow, interrupted in the middle, which become increasingly narrower on each succeeding segment. The apical halves of the sternites are covered with a fairly dense, whitish and exerted pilosity. Clypeus and lower two-thirds of the face with silvery pubescence, dull, finely and closely punctured; the upper part of the face and the vertex finely, shallowly and rather sparsely punctured, slightly shining between the punctures. The latter are separated by spaces which are about two to three times wider than the punctures. A space between the posterior ocelli and the eyes is shining and almost smooth. Mesonotum, scutellum and tergites shining, finely, shallowly and not closely punctured; the punctures on the mesonotum not contiguous except near the anterior lateral angles, widely separated on the scutellum, and separated on the second tergite by spaces about three times the width of the largest puncture. Median impression on the first tergite shallow. Wings hyaline, the veins ochreous, the costa brownish yellow. The space between the eyes and the posterior ocelli is half as great again as the diameter of one ocellus. Mandibles reddish yellow, the base, apex and inner margin fusco-ferruginous. First joint of the flagellum as wide as long, the second and last one-fourth longer than wide, the other joints as wide as, or wider than long. The mucro is less acute than in *acutissimus*. Otherwise like that species.

♂. 4-5 mm. long. Scares and first joint of the flagellum chrome yellow, the former with a black spot behind. Flagellum ochreous, the second to sixth joints brownish above, the apical joint dark brown. The yellow pattern on the body is like that of the ♀, but the colour is deeper, or chrome yellow. The spots on the scutellum and the yellow markings on the femora and tibiae are more extensive than in the ♀. Last two joints of all the tarsi blackish. Pilosity on the sternites longer and more abundant than in the ♀. The punctuation is everywhere stronger than in the ♀, that of the mesonotum consisting of large, fairly shallow but not quite contiguous punctures. The tergites are shining as in the ♀. The clypeus has a high convex carina in the middle which ends as a tooth overhanging the incurved anterior margin. Between it and the lateral teeth the anterior margin is concave, and behind the concavity there is a dense brush of reddish silvery pubescence. The mucro, which is translucent ochreous on the apical half, is relatively wider than in the ♀ and less acute at the apex. The lateral margins of the scutellum are flat, not raised into vertical membranous lamellae. Mesonotum and scutellum margined posteriorly by a row of short carinae.



Fig. 14. *Oxybelus paucipunctatus*, ♀, posterior half of thorax; a, metanotum and mucro of ♂; b, clypeus of ♂.



Sawmills, S.R., December; Willowmore, C.P., January (G. Arnold). (R.M. and T.M. colls., types in R.M. coll.)

*O. Stevensoni* n.sp. (figs. 15 and 15 a).

♂. 4.5 mm. long. Black, the mesonotum ferruginous (pale burnt sienna). The following parts are bright chrome yellow: scapes and first joint of the flagellum, pronotal collar and tubercles, a vertical oblong bar at the anterior margin of the mesopleurae, two large oval spots on the scutellum, the middle of the metanotum, pre-apical transverse bands, widely interrupted in the middle, on the first four tergites; those of the first tergite very wide and extending as far as the brow of the declivous anterior face, the others decreasing in width on each succeeding tergite. The whole of the fifth to seventh abdominal segments are of the same pale ferruginous colour as the mesonotum. Second sternite with a dull yellow spot on each side near the apical margin. Mandibles ferruginous, piceous at the apex. Extreme anterior margin of the clypeus also ferruginous. Flagellum excepting the first joint pale ferruginous, the apical joint dark brown. Tibiae bright chrome yellow; anterior femora yellow, their bases below pale ferruginous, the middle femora with the ferruginous colour more extensive and the hind femora ferruginous except the extreme apex which is yellow. Tarsi pale yellow, the apices of the joints ochreous. Tegulae ochreous; wings hyaline, the veins brown. Epinotal mucro blackish, the apical part testaceous. Pubescence on the clypeus, face and temples silvery. Mesonotum with a very thin yellowish, the mesopleurae with coarser and silvery, and the abdomen with a sparse and whitish pubescence. Clypeus dull and finely punctured in front, smooth and shining posteriorly. Lower half of the face dull and finely punctured, the upper half and the vertex with larger punctures, the spaces between them smooth and shining. The punctures on the ocellar area are smaller and closer together than elsewhere. The occiput and posterior part of the vertex are very coarsely punctured, the spaces between shining and slightly aeneous; the occiput and temples lack the transverse rugosity which is present in most of our other species. Mesonotum shining, with punctures as large and deep as those of the occiput, many of which are separated by spaces fully three times the diameter of one of the punctures. Mesopleurae less deeply punctured than the mesonotum. Scutellum shining, as coarsely punctured as the mesonotum but less closely, not carinate in the middle except near the posterior margin. Metanotum with a low median carina and one or two indistinct rugae on each side. Sides and declivity of the epinotum transversely rugose, the declivity more closely so than the sides, the spaces between the rugae reticulate and slightly shining. Dorsum of the epinotum obliquely and not closely rugose, the spaces between with a superficial reticulation. Tergites 1-5 strongly and closely punctured, the punctures becoming gradually smaller on each succeeding segment, those on the first tergite as large as on the mesonotum. Sixth and seventh tergites with a few large and shallow punctures, the seventh subquadrate, wider than long. Sternites 1-6 shining, very sparsely punctured, the second with large and shallow punctures, the rest with small ones. Seventh sternite dull and punctulate. The median area of the clypeus has the anterior margin depressed, tridentate, the median tooth

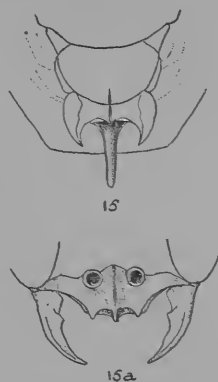


Fig. 15. *Oxybelus Stevensoni*, ♂, posterior half of thorax; a, clypeus.

being formed by the end of the rather broad longitudinal carina. Face narrowest a little below the middle, one-fourth longer than wide at that point. Scutellum nearly twice as wide in front as long in the middle, the sides with narrow transparent lamellae. Metanotal squamae transparent, hyaline, the outer edge pale ochreous, rostriform, acute at the apex and as long as the scutellum. Epinotum with a long and hollowed-out mucro, almost parallel-sided over the greater part of its length, slightly narrowed towards the apex which is fairly acute. It is as long as the scutellum plus half the middle of the metanotum. Calcaria and spines on the legs pale yellowish white.

Bulawayo, September, 2 ♂♂ (R. H. R. Stevenson). Type in coll. Stevenson, paratype in R.M. coll.

This is a very distinct species, easily recognised by its ferruginous mesonotum and long mucro.

*O. matabele* n.sp. (figs. 16, 16 a and b).

♀. 6–7 mm. long. Black; scapes and first two or three joints of the flagellum dark brown, the rest of the flagellum ochreous. Mandibles piceous at the base and apex, the middle third yellowish red. Anterior tarsi and inner side of the tibiae dirty yellow; middle and hind tarsi with the first three joints brown, the rest brownish ochreous. Calcaria yellowish, spines on the legs white, pulvilli black. Tegulae dark brown. The transparent metanotal squamae dirty yellowish and opaque on their inner sides. In contradistinction to most of the species of this genus the abdomen is mainly black; the depressed apical margins of the first four tergites are yellowish grey, and behind and adjacent to the apical margins there are very narrow, pale yellowish transverse bands. These are widely interrupted on the first, less so on the others. In some examples this yellow band is obsolete on the first and fourth, and much reduced on the second and third tergites. The apical margins are covered with silvery pubescence, forming distinct transverse fasciae. Extreme apex of the pygidium piceous or fusco-ferruginous. Head, thorax, abdomen, femora and tibiae covered with a very short, adpressed and silvery pubescence, longer and fairly abundant on the face and pronotal collar, very scanty on the mesothorax, and inconspicuous on the abdomen excepting the declivous face of the first tergite. The lateral areas of the epinotal dorsum are, however, covered with a dense silvery pubescence which completely obscures the underlying sculpture. Head dull, the face and clypeus closely and finely punctured, the vertex more strongly so. Lower half of the temples shining and striate, the upper part and the occiput with the usual punctate-striate sculpture. Mesonotum dull, strongly and closely punctured, the scutellum more coarsely and less closely, shining between the punctures. Metanotum rugose and punctate, dull; the squamae convex on both sides, bifid at the apex, the outer lobe transversely ribbed and acute at the apex, the inner one rounded at the apex. Epinotal process very shallowly gutter-shaped, slightly amplified from the basal third to the apex, the floor dull and fairly flat, the apical half finely rugose, the middle with a few transverse striae, the apical margin shallowly excised in the middle, the apical lobes rounded. It is twice as long as wide at the base. Upper part of the mesopleurae transversely and

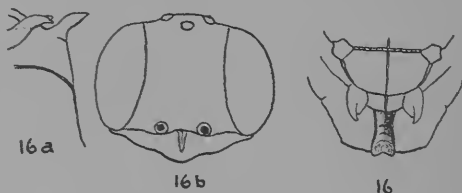


Fig. 16. *Oxybelus matabele*, ♀, posterior half of thorax; a, lateral view of epinotum; b, head.

shallowly sulcate, with a few punctures in between; the lower half and the mesosternum are slightly shining, very sparsely and coarsely punctured. Metapleurae dull, transversely striate, reticulate-rugose above. Sides of the epinotum dull, transversely and closely striate, the declivity reticulate-punctate, its triangular median fovea transversely rugose. Tergites dull, closely and strongly punctured, the punctures becoming gradually smaller on each succeeding segment; on the second they are separated by spaces not wider than the punctures. Pygidial area with large and elongate punctures. Sternites shining, with rugulose depressed apical margins, sparsely punctured with large and very shallow punctures, except at the sides where the puncturation is closer and smaller. Face widest at the middle, one-fifth longer than wide. Anterior margin of clypeus rounded, the median area longitudinally carinate in the middle. Second joint of the flagellum as long as the first. Posterior ocelli separated from the eyes by a space a little greater than their own diameter. Scutellum twice as wide at the base as long in the middle. Anterior metatarsus with six spines. Wings hyaline, the veins ochreous, the stigma and costa brownish.

♂. 6 mm. long. Mandibles black, with a ferruginous bar a little behind the apex. Flagellum dark brown above, brownish yellow below. Metanotal squamae greyish and translucent outwardly, black inwardly. Tergites with the depressed apical margins dark brown, pubescent as in the ♀, but without the transverse yellow bands which are present in that sex. Anterior tibiae and tarsi darker than in the ♀, the middle and hind tarsi dark brown, becoming paler towards the apical joint. Veins of the wings brown. Clypeus and face moderately shining, the lateral teeth on the clypeus broadly truncate. Face sparsely and more strongly punctured than in the ♀, and similarly also the mesonotum and scutellum. The mesopleurae in front of the episternal suture are strongly but not closely rugoso-striate transversely, and behind the suture are very coarsely reticulate rugose above, vertically rugose below, with large shallow punctures in between. The dorsum of the epinotum lacks the dense silvery pubescence which is present in the ♀, so that the sculpture is plainly visible. It consists of strong rugae radiating outwards from below the epinotal process. The latter is of the same general form as in the ♀, but relatively narrower, being two and a half times longer than wide at the base; its apex is only shallowly excised. The third to sixth tergites have a short translucent tooth on each side of the apical margin.

Nesting in sandbanks of the Umgusa River, Sawmills, S.R. (G. Arnold), October to January. Types in R.M. coll. (R.M. and T.M. colls.).

*O. Braunsi* n.sp.

♀. 5 mm. long. Black; scapes pale yellow, with a black streak behind, flagellum ochreous, somewhat darker basally. Mandibles reddish ochreous, the base and apex reddish brown. The following parts are chrome yellow: a very narrow and short streak on each side of the pronotal collar, the pronotal tubercles, an oblique spot on each side of the scutellum near the lateral margin, the lateral trabeculae of the scutellum and metanotum, the inner edge of the metanotal squamae, and very narrow preapical transverse bands on the first four tergites, only those on the first and second being narrowly interrupted in the middle. The depressed apical margins of the first four tergites dull grey. Upper side of the anterior and middle tibiae, upper basal third of the hind tibiae and the extreme apex of the anterior femora, pale ochreous. Tarsi dull ochreous, those of the middle and hind legs suffused with fuscous. Wings hyaline, veins and tegulae ochreous, costa and stigma pale brown. Head, mesothorax, lateral areas of the epinotal dorsum and declivous face of

the first tergite clothed with an adpressed golden pubescence, dense and obscuring the sculpture on the clypeus, face and lateral areas of the epinotal dorsum, scanty elsewhere.

Apical margins of the first five tergites with similar pubescence. Face and vertex sharply punctured, the puncturation not dense, the spaces between the punctures shining. Ocellar area more coarsely and less closely punctured. Mesonotum and scutellum evenly punctured, the punctures on the mesonotum a little larger than those on the ocellar area, separated by shining spaces which are mostly wider than the punctures themselves. Pronotal collar almost as long in the middle as at the corners, dull and transversely rugulose. Mesopleurae shining, sparsely and coarsely punctured and transversely striate. Metanotum with a few rugae on each side of the median carina. Scutellum longitudinally carinate in the middle. Sides of epinotum closely and transversely striolate. Declivity and dorsum of the epinotum dull, finely reticulate-punctate, the declivity with a transverse rugulosity in addition. Tergites dull; the first more closely and more finely punctured than the mesonotum, tergites 2-5 closely punctured, the puncturation equal on all four segments and clearly smaller than on the first. Pygidial area triangular, a little longer than wide at the base, the apex narrow, coarsely punctured and covered with short reddish yellow hairs. Sternites shining, the second with a large, very shallow and sparse puncturation, the 3-5 with a few shallow punctures near the apical margin.

Clypeus bluntly carinate lengthwise in the middle, its anterior margin transverse, with a small tooth on each side of the median area. Face wide, narrowest above the middle, one-fifth longer than wide at that point. Mesonotum three and a half times as long in the middle as the scutellum, the latter wide, or fully two and a half times wider in front than long in the middle, its lateral margins raised into feeble translucent lamellae. The metanotal squamae and the epinotal process are shaped like those of *O. solitarius* Arn., but the squamae are wider. The epinotal process is almost as long as the scutellum and metanotum taken together, and is only slightly widened apically.

Allied to *O. solitarius*, but differing in the colour of the pubescence and the sculpture of the mesopleurae.

Sunday River, C.P., November (Dr H. Brauns), 1♀. Type in coll. Brauns.

*O. solitarius* n.sp. (figs. 17, 17 a and b).

♂. 5-6 mm. long. Black; the following parts pale lemon yellow: anterior and middle tibiae on the upper side, a streak on the outside of the fore and middle femora from the apex to the middle, a shorter streak on the hind femora, the pronotal collar and tubercles, a longitudinal and narrow streak on the lateral margins of the scutellum, the metanotum and inner half of its squamae, and transverse apical bands, slightly broken in the middle, on the first six tergites. Anterior tibiae below and the middle and hind metatarsi brown. Anterior tarsi ochreous, the middle and hind pair pale ferruginous. Mandibles fusco-ferruginous, the base and apex black. Scapes dark brown, flagellum brownish over the basal half, becoming gradually paler or brownish ochreous towards the apex. Tegulae testaceous, with pale yellow spots in front and at the side. Epinotal process dark brown basally, testaceous at the apex. Clypeus, face and temples with a rather coarse and not dense, silvery pubescence. Thorax with a short and sparse whitish pubescence, the lateral areas of the epinotal dorsum covered with longer and silvery hairs which obscure the underlying sculpture. Abdomen with a fine greyish pubescence, not conspicuous except on the apical margins of the segments. Sternites with

some longer exerted hairs on the apical margins. Head and mesonotum dull, closely and finely reticulate-punctate, the punctures smallest and most dense on the face. Scutellum coarsely punctured. Mesopleurae strongly rugoso-punctate, the metapleurae transversely rugose, sides and declivity of epinotum dull, closely transversely striate, the striae strongest on the sides of the epinotum near the dorsum. Median area of the epinotum small, slightly shining, with two or three oblique rugae on each side of the middle, the space below the epinotal process dull, finely and closely punctulate. Tergites dull, closely and not coarsely punctured, the punctures on the first tergite the largest, but hardly twice as large as those on the second. First sternite dull and closely punctured, the other sternites shining, the second shallowly, sparsely and coarsely punctured in the middle, closely and finely so at the sides, the third to fifth sternites with a few large punctures in front of the apical margin. Mandibles long, with a tooth at the basal third of the inner margin. Clypeus semicircularly excised in the middle of the anterior margin, and with a small tooth on each side at some distance from the excision, carinate longitudinally in the middle, the carina ending in a tooth which projects beyond the median excision. Second joint of the flagellum a little longer than the third. Posterior ocelli separated from the eyes by a distance slightly greater than their own diameter. Pronotal tubercles, viewed from above, produced outwards into a sharp broad tooth. Mesonotum twice as long as the scutellum. Epinotal process gutter-shaped, slightly narrowed over the basal third, the sides beyond that part moderately raised, traversed by two or three rugae, the apex shallowly and angularly excised in the middle, the apical angles rounded, a little more than twice as long as wide at the apex and about as long as the scutellum. Metanotal squamae narrow, falciform, fully twice as long on the outer edge as wide at the base, free almost to the base, the apex acute, the inner edge feebly festooned. The median carina on the scutellum is low, that on the metanotum high, and viewed from the side ends in a projecting tooth. Spines on the tibiae and tarsi whitish, calcaria of the hind tibiae ochreous.

Sawmills, S.R., October, 2 ♂♂ (G. Arnold); Rhodesdale, S.R., November, 2 ♂♂, Bulawayo, 1 ♂ (R. H. R. Stevenson). Type in R.M. coll.

In the examples from Rhodesdale and Bulawayo the epinotal process is almost parallel-sided, longer and less curved at the basal third than in the type of the species, and about two and a half times longer than wide. In these specimens the pubescence on the lateral areas of the epinotal dorsum is also less dense, and in two of them the posterior tarsi are pale ferruginous.

*O. ruficaudis* Cameron (figs. 18 and 18 a-c). *Records Albany Museum*, p. 208, ♀. 1905.

*O. capensis* Cam., ♂, *ibid.* p. 209.

♀. 7 mm. long. Black. Mandibles reddish yellow at the base, piceous at the apex. Tibiae, tarsi, apices of the femora on the inner side, lower surface of the flagellum, tegulae, base of the costa of the forewing, apical third of the epinotal process, apex of fifth and the whole of the sixth abdominal

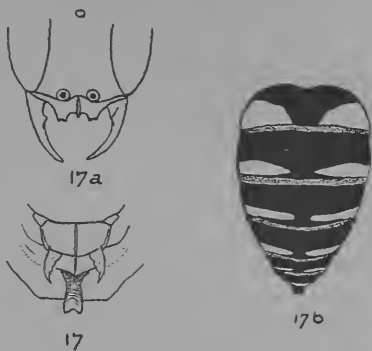


Fig. 17. *Oxybelus solitarius*, ♂, posterior half of thorax; a, clypeus; b, abdomen.

segment, ferruginous. Posterior tibiae brown above. Pronotal tubercles, pronotal collar, a round spot on each side of the scutellum in front, metanotum in the middle, and subelliptical spots on each side of the first four tergites, pale lemon yellow. These spots on the abdomen become progressively smaller on each succeeding segment. Clypeus and face with silvery pubescence, side of thorax with a sparse whitish pubescence. Head, mesonotum, scutellum and tergites closely and strongly punctured, the head with smaller punctures than the mesonotum. The largest punctures are on the first tergite, those on the middle of the second about as large as those on the mesonotum. Pygidial area with an elongate and close puncturation, and covered with yellowish setae. Mesopleurae strongly punctured, behind the episternal suture also transversely rugose. Epinotal process gutter-shaped, shining, widened towards the apex, twice as long as wide at the base, the apex deeply and semi-circularly emarginate in the middle, the apical angles rounded, the floor with one or two strong, curved and transverse carinae at about the middle. Clypeus short, strongly carinate in the middle, the basal half of the carina prominent,

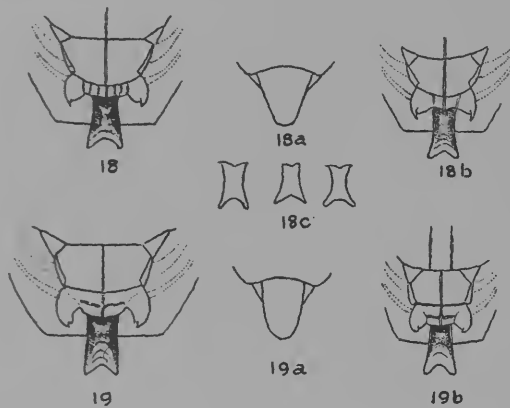


Fig. 18. *Oxybelus ruficaudis*, ♀, posterior half of thorax; a, pygidium; b, posterior half of thorax of ♂; c, three forms of epinotal process in the ♂.

Fig. 19. *Oxybelus natalensis*, ♀, posterior half of thorax; a, pygidium; b, posterior half of thorax of ♂.

the anterior margin of the median area straight and ending in two very short and blunt teeth on each side. Face narrowest in the middle, half as long again as wide at that point. Scutellum and metanotum carinate in the middle. Metanotal squamae bifid at the apex. Sides of epinotum transversely striate in front, reticulate-rugose behind; the declivity transversely rugose and reticulate between the rugae. Pygidial area a little longer than wide at the base. Spines and calcaria of the legs pale ferruginous (not white as stated by Cameron). Wings hyaline, the veins pale brown.

This description is based on the type belonging to the Albany Museum, Grahamstown. In Rhodesian specimens the legs are redder, the posterior tibiae being wholly ferruginous, and the middle and hind femora are ferruginous over at least the apical third. The anterior tibiae at the base above and the anterior and middle femora at the extreme apex below are lemon yellow. The epinotal process in Rhodesian specimens is piceous, with the lateral margins and apex translucent and fuscous; it varies somewhat in shape, in some specimens being almost parallel-sided, and in others gradually but distinctly amplified towards the apex.

♂, 5-5.5 mm. long. Colour pattern like that of the ♀, but the yellow is brighter, and in addition the scapes and first joint of the flagellum are also of that colour. In the ♀ the sides of the pronotal collar next to the tubercles are black, whereas in this sex the whole of it is deep lemon yellow. The tibiae, anterior and middle femora in front and their apical two-thirds behind, and the apex of the hind femora are lemon yellow. Tarsi yellow, becoming gradually reddish yellow towards the apex. Basal two-thirds of the mandibles yellow, the apex black, the inner margin reddish. The apical half or less of the fifth abdominal segment, and the whole of the sixth and seventh are ferruginous. The apical lateral spines of the tergites are of a reddish colour, the sixth has also an inner pair of teeth just behind the apical margin. Pubescence of the face brassy-silvery, ending somewhat abruptly a little above the middle. The pubescence on the tergites consists of short hairs arising from the punctures, which are black on the first four tergites, paler on the rest. The vertex in most specimens has a faint bronzy lustre. The sculpture of the head and thorax somewhat stronger and closer than in the ♀. The epinotal process is as a rule more widened apically than in the ♀ but the shape is decidedly variable; usually the apical excision is more or less rounded, but it may also be obtusely angular (see fig. 18 c). The apical half is translucent testaceous, the basal portion black. Pygidial area almost quadrate, slightly longer than wide. Clypeus with the anterior margin depressed, longitudinally carinate in the middle, the carina ending in a blunt tooth; on each side of the median area the anterior margin has two small teeth, and behind them there is another and blunter tooth. Otherwise like the ♀. I have seen the type of *capensis* Cameron which is undoubtedly the ♂ of this species.

Not a very common species but widely distributed throughout South Africa and Rhodesia. (R.M. and T.M. colls.)

*O. ruficaudis*, var. *melanarius* v.nov.

♀. 5-8 mm. long. Scapes and femora brownish black, the anterior femora without a spot of yellow at the apex, but like the middle femora their apices underneath are dark ferruginous. Fifth tergite entirely black, pygidium ferruginous or sometimes almost black, in the latter case the yellow maculae on the tergites are very much reduced. In the smaller examples the yellow maculae on the fourth tergite are sometimes absent.

♂. 5-7 mm. long. The specimens which I attribute to this variety have the anterior and middle femora black on the basal two-thirds of the upper surface and also in front and behind, the outer side including the whole of the apical third is lemon yellow. Posterior femora black, their apices lemon yellow. The last two abdominal segments are ferruginous as in the type of the species. The yellowish erect pilosity on the vertex is longer and more abundant. Otherwise like the type of the species. This variety varies in size a good deal more than the type of the species, and at first glance might be regarded as a variety of *Peringueyi*, but it differs from that species in sculpture, the shape of the metanotal squamae and epinotal process, wherein it shows a close relationship to *ruficaudis*.

Willowmore, Port Elizabeth and Ladismith, C.P., January to April (Dr H. Brauns). Type in coll. Brauns. (R.M. and T.M. colls.)

*O. natalensis* n.sp. (figs. 19, 19 a and b).

♀. 7 mm. long. Black. Antennae, all the femora and tibiae, the epinotal process excepting the base in the middle, tegulae and apical segment of the abdomen, ferruginous. The anterior tibiae are yellow on the outer side. Tarsi flavo-ferruginous. Wings hyaline, tinged with yellow, the veins and



stigma brownish ochreous. Mandibles pale yellow at the base, darkening to fusco-ferruginous at the apex. Pronotal collar and tubercles, a spot on each side of the scutellum, a small spot on the inside of the metanotal squamae and transverse maculae on each side of the first five tergites, deep chrome yellow. The maculae on the first four tergites are widely separated, those of the fifth joined together in the middle.

The yellow coloration of the tergites is of the same pattern and tint as in *O. flaviventris* (see fig. 13). In *ruficaudis* Cam., to which this species is related, the yellow is much paler, the maculae smaller and confined to the first four tergites. Pubescence like that of *ruficaudis*. The sculpture is also similar, but distinctly finer and shallower everywhere, and the mesopleurae have a few transverse rugae in addition to the puncturation. The clypeus has the median carina much more strongly developed than in *ruficaudis*, more prominent basally, where it forms a blunt conical tubercle. The face is much wider than in *ruficaudis*, being as wide at its narrowest point as it is long. The mesonotum and scutellum are very convex lengthwise, much more so than in *ruficaudis*, especially the scutellum which is highest at about the posterior third (in the middle in *ruficaudis*). Both the scutellum and metanotum are strongly carinate longitudinally in the middle, but the metanotum is longer than in *ruficaudis*, being fully half as long in the middle as the scutellum (only one-third in the other species). The metanotum also has a transverse carina on each side, whereas in *ruficaudis* there are only three short longitudinal carinae on each side of the middle one. The metanotal squamae are longer and more convex on the outer margin. The epinotal process is gutter-shaped as in *ruficaudis* but it is longer and parallel-sided. The abdomen is distinctly cordate and much wider than in *ruficaudis*; it is one-fourth longer than wide at its widest (across the second segment), whereas in *ruficaudis* it is half as long again as wide. The pygidial area is narrower or nearly semi-elliptical, and not subtriangular as in *ruficaudis*.

♂. 5 mm. long. Flagellum brown, slightly paler towards the apex. Scapes straw yellow in front, ferruginous behind. Tibiae and tarsi yellow, the posterior tibiae with a black streak below. Femora ferruginous. Veins and stigma of the wings dark brown, otherwise coloured like the ♀. Face narrower than in the ♀ and resembling that of *ruficaudis* ♂, being half as long again as wide at its narrowest point. The puncturation of the mesonotum is not so close as in *ruficaudis* ♂, but it is a little coarser and deeper. On each side of the middle there is a wavy longitudinal carina which nearly reaches the anterior margin. Scutellum subquadrate, about as wide behind as in front, the posterior margin nearly straight. In *ruficaudis* the scutellum forms almost a semicircle, the convexity forming the posterior margin. The yellow spots on the scutellum are much reduced, and in one specimen almost obsolete. As in the ♀ the metanotum is long, being two-thirds the length of the scutellum; in the middle it is entirely black, but the squamae are translucent and yellowish. The epinotal process resembles that of *ruficaudis* ♂, but is longer and flatter, the sides being less raised. Puncturation of the abdomen stronger than in *ruficaudis* ♂, the largest punctures on the first tergite are distinctly larger than those of the mesonotum. Otherwise like the ♀.

Stella Bush, Durban, 1 ♀, type; Malvern, Natal, 1 ♀ (C. N. Barker); Doonside, Natal, 2 ♂♂, type (A. L. Bevis); Durban, 1 ♂ (E. C. Chubb). Types in the Durban Museum, paratypes in Rhodesia Museum.

*O. Peringueyi* Saussure (figs. 20 and 20 a-c). Grandidier, *Hist. Madagasc.* xx, p. 563, ♀. 1892.

♀. 5-7.5 mm. long. A species allied to *ruficaudis* Cam., with the same form of epinotal process, but differing by the coloration, considerably finer

puncturation, especially of the tergites, and by the shining surface between the punctures on those parts.

Black. The basal half of the mandibles, a longitudinal streak on the front of the anterior tibiae, the lateral angles of the pronotal collar, the pronotal tubercles, the metanotum, an elongate spot at the extreme base of the middle and hind tibiae, and transverse and fairly small spots on each side of the first four tergites, pale whitish yellow. Scapes and first three joints of the flagellum blackish, the remaining joints pale ferruginous, the apical half of the last joint fuscous. Apex of pygidium ferruginous; the depressed apical margins of the second to fifth sternites flavo-testaceous. Tegulae brownish ochreous, with a small spot of whitish yellow in front. Wings hyaline, very slightly tinged with fuscous yellow, the veins and stigma brown. Face and temples with a silvery pubescence, not very dense. Vertex and mesonotum with a yellowish grey and erect pubescence, fairly long on the former. The scutellum and metanotal squamae have a yellowish pilosity, sparse but quite noticeable. Mesopleurae with a sparse whitish pubescence below, the lateral areas of the epinotal dorsum with decumbent greyish pubescence, fairly

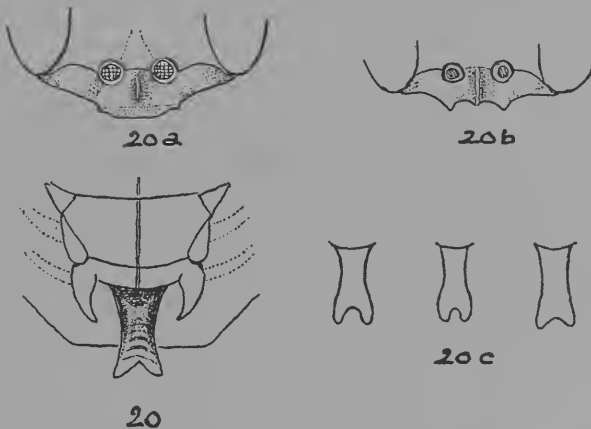


Fig. 20. *Oxybelus Peringueyi*, ♀, posterior half of thorax; a, clypeus; b, clypeus of ♂; c, three forms of epinotal process in the ♂.

dense but not obscuring the sculpture. Tergites 1-5, and sides of the second sternite with greyish pubescence, fairly long and conspicuous on the apical margins. Face finely and closely punctured, dull; towards the vertex and on it the punctures become larger and are more widely separated, a small area in front of each ocellus sparsely punctured and shining. Pronotum slightly shining and rugulose. Mesonotum and scutellum deeply punctured, shining between the punctures, the average space between the punctures being at least equal to the width of a puncture. Mesonotum with traces of transverse rugae on the sides in front, longitudinally impressed in the middle over the anterior half, and carinate on the posterior half. Scutellum and metanotum carinate longitudinally in the middle. Metanotum shallowly punctured and shining. Mesopleurae shining, sparsely and coarsely punctured except over the upper anterior angle and the lower margin, where the punctures are closer and finer than on the mesonotum. Metapleurae and sides of epinotum transversely striate, the latter finely so and punctulate between the striae. Declivity of the epinotum, lateral areas of the dorsum and the apical part of the median area dull, microscopically reticulate-punctate and with a few transverse rugae near the lateral carinae. The median area on

each side of the epinotal process is slightly shining, finely rugulose and has five or six oblique carinae on each side. Abdomen shining, fairly finely and by no means closely punctured. The largest punctures, which are on the apical half of the first and the middle of the second tergites, are shallow and distinctly smaller than the smallest on the mesonotum, they are separated by spaces which on the average are three times as wide as the largest puncture. Median area of the clypeus like that of *ruficaudis*, but the anterior margin is feebly convex and the median carina shorter and more prominent, forming an almost conical tubercle. Face narrowest in the middle, the inner margins of the eyes almost parallel over their upper half. Posterior ocelli separated from the eyes by a distance equal to one and a half times the diameter of one ocellus. Pronotal collar very short in the middle, so that when viewed from above, only the lateral angles are visible. Metanotal squamae rostriform, the outer half transparent, narrower than in *ruficaudis*, the apex acute. The epinotal process, which is piceous, hardly differs from that of *ruficaudis* and varies in shape to the same extent as in that species. The apical margins of the tergites are only very narrowly depressed. Pygidial area strongly punctured, a little longer than wide at the base, the apex rounded, narrower than in *ruficaudis*. Anterior metatarsi with seven spines, the spines on the middle and hind tibiae pale brownish yellow.

♂. 4.2–6 mm. long. The colour pattern in this sex strongly resembles that of *ruficaudis* ♂, nevertheless there are constant differences which make a confusion of the two species avoidable. The yellow is distinctly paler, more lemon yellow than chrome yellow. The scapes are black as in the ♀, and the apical half of the last joint of the flagellum is fuscous. The tarsi are all darker than in *ruficaudis* ♂, varying from fuscous to pale fusco-ferruginous, the basal joints darkest. The anterior tibiae are yellow outwardly and reddish ochreous on the inner face. The yellow on the anterior femora is less extensive, being confined to the apical upper half, the rest of the upper half being black, with nearly the whole of the underside brown. Of the middle femora only the apical fourth is yellow, and even less of the posterior femora, the rest of those parts being black. The underside of the middle and hind tibiae are brownish black. Tegulae yellow. The two spots on the scutellum are usually more extensive, sometimes meeting in the middle. The apical part of the epinotal process is generally more or less translucent and ferruginous. The yellow bands on the tergites are somewhat narrower than in *ruficaudis* ♂, especially on the first, where the more or less triangular marks often meet in the middle, although they rarely extend as far as the brow of declivous base of the segment. The basal half of the fifth and the whole of the sixth and seventh segments are black, never ferruginous as in *ruficaudis*, although the extreme apical margin of the seventh is sometimes castaneous. The sculpture of the head and thorax does not differ appreciably from that of *ruficaudis* ♂, except that on the posterior third of the scutellum there are two or three longitudinal carinae on each side of the median one, whereas in *ruficaudis* ♂ that part is merely widely reticulate-rugose. The puncturation of the tergites is distinctly finer, especially on the greater part of the second tergite where the punctures are clearly smaller than those on the apical half of the first tergite. The pubescence on the vertex and mesonotum is longer than in *ruficaudis*, and the metanotal squamae, as in the ♀, have a few long and exserted hairs, entirely lacking in the other species. Pubescence on the abdomen whitish, not black as in *ruficaudis*. The character of the greatest importance for distinguishing the two species is the shape of the clypeus. In *Peringueyi* the clypeus is triangularly produced in front on each side of the middle, and there is a strong median carina which reaches the anterior

margin and ends in a tooth (this is more easily recognised if viewed from behind). The pronotal collar is not so short as in the ♀, nevertheless it is a little shorter than in *ruficaudis* ♂. The scutellum has the lateral margins raised into transparent ochreous squamae, convex above and concave below, whereas in *ruficaudis* ♂ the lateral margins merely form short vertical lamellae. The metanotal squamae are more acute than in *ruficaudis* ♂ and entire, not bifid at the apex. The median longitudinal impression on the brow of the first tergite is much shallower than in *ruficaudis*.

Parys, O.F.S. (Péringuey); Willowmore, and Oudtshorn, C.P. (Brauns). (R.M. and T.M. colls.)

*O. limatus* n.sp. (figs. 21 and 21 a-c).

♀. 4.5 mm. long. Black with a bronzy lustre. The following parts very pale lemon yellow: Mandibles excepting their fusco-ferruginous apices and inner margins, labrum and palpi, median area of the clypeus, scapes and first joint of the flagellum, pronotal collar and tubercles, tegulae, a spot in front and a larger spot behind on the lower margin of the mesopleurae, the whole of the mesosternum, two large spots covering the greater part of the scutellum, the inner margin of the otherwise hyaline metanotal squamae, a triangular spot on each side of the first tergite, apical bands on the second to fourth tergites and sternites, the whole of the fifth and sixth sternites and the fifth tergite. The transverse bands on the second and third tergites are interrupted in the middle, and the sixth tergite or pygidium is reddish ochreous at the extreme apex. All the legs, including the coxae and trochanters are pale yellow, but the yellow is somewhat darker than on the body. The posterior tibiae are brownish on the under side near the apex, and the apical joints of all the tarsi are more or less ochreous. Flagellum ochreous below, brownish yellow above. The epinotal process is reddish hyaline, with a Λ-shaped median opaque yellow area. Wings hyaline, the veins and stigma ochreous, the radius and costa along the radial cell brownish yellow. Face, temples and mesopleurae with a sparse silvery pubescence, exceedingly scanty on the mesopleurae; mesonotum with a very short and not dense pubescence, slightly golden in colour when seen from the side. Abdomen with a scanty yellowish white pubescence on the apical margins of the segments and on the pygidial area, elsewhere almost glabrous excepting the second sternite. Clypeus finely punctured and dull. Face and vertex shining between the punctures; the latter are not large, although increasing in size upwards, and for the most part are separated by spaces at least twice the diameter of one puncture. On the upper third of the face and on the vertex the puncturation is decidedly sparse. Occiput and temples striate-punctate, the striae thin. Mesonotum shining, evenly and not closely punctured, the punctures larger than those on the vertex. Scutellum shining, with a few large punctures on the posterior half and a few short longitudinal carinae in front of the posterior margin, longitudinally carinate in the middle. Metanotum rugose on each side of the high median carina. Mesopleurae shining, sparsely punctured, the punctures shallow and large. Sides of epinotum slightly glossy, strongly

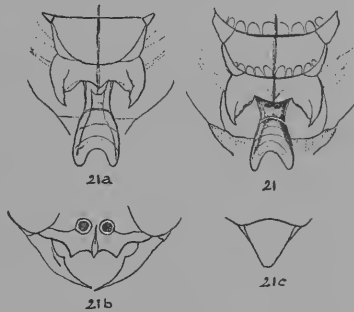


Fig. 21. *Oxybelus limatus*, ♀, posterior half of thorax; a, posterior half of thorax of ♂; b, clypeus of ♂; c, pygidium, ♀. (Dotted line on epinotal process indicates the opaque yellow area.)

and transversely striate, finely punctured between the striae. Median area of the epinotum almost dull, finely reticulate-punctate, with a few oblique rugae on each side; the lateral areas of the dorsum coarsely reticulate-rugose and dull, the declivity transversely and not closely rugose. Abdomen smooth and shining; the first tergite finely and very sparsely punctured, especially in the middle where the punctures are separated by spaces at least four times wider than one of the punctures, the apical margin more closely punctured. The second to fourth tergites are a little more closely punctured than the first, the punctures as large as on that segment; the fifth and sixth are sparsely and more coarsely punctured. Sternites shining, the second finely and closely punctured at the sides, sparsely and less finely in the middle, the remaining sternites with a few preapical punctures.

Anterior margin of the clypeus feebly convex; the median area is not carinate longitudinally in the middle but merely swollen at the base. Face wide, very nearly as wide as long. First three joints of the flagellum of about equal length. Posterior ocelli separated from the eyes by a distance less than their own diameter. Upper angle of the pronotal tubercle dentate. Scutellum with narrow translucent lateral squamae and a median longitudinal carina. Metanotal squamae rostriform, the apex acute and directed downwards, the outer margin convex, the posterior margin festooned; the median carina is fairly high in its posterior half. The epinotal process is sharply bent upwards from its basal fourth to the apical margin, which is nearly semicircularly excised, the apical lobes rounded. It is traversed by three strongly curved ridges. The process is fully as long as the scutellum and metanotum united. Abdomen distinctly broad over the basal half, cordate, about one-fifth longer than wide. First tergite with a median longitudinal impression on the brow. Pygidial area triangular, as long as wide at the base, the apex narrowly truncate. Spines on the legs pale yellow, calcaria ochreous, anterior metatarsi with six spines on the outer margin.

♂. 3.3-4.2 mm. long. Clypeus entirely black, the palpi brown. Scapes black, the extreme apex yellowish below. First joint of the flagellum yellow, with a black spot above, the rest of the flagellum brownish above and dirty yellow below. Mesothorax entirely black. Last four joints of the tarsi ochreous, the first joint and the tibiae chrome yellow, the latter with a blackish streak below. Coxae, trochanters and femora black, the apical third or more of the latter chrome yellow. Scutellum often entirely yellow excepting a small black patch in the middle of the posterior margin; tergites 1-6 with broad transverse apical bands which are not interrupted in the middle, although that of the second is narrowed at that point; seventh abdominal segment pale yellowish red. Otherwise coloured like the ♀, but the yellow is darker or chrome yellow. Punctuation of the face closer than in the ♀, the intervening spaces less shining, especially on the vertex. Mesothorax dull, the punctuation closer and much coarser than in the ♀, the punctures contiguous and larger than the punctures on the vertex. Sides of the epinotum more closely and more finely striate than in the ♀. Metanotal squamae shorter than in the ♀. Epinotal process more rapidly amplified from the basal fourth onwards, slightly narrowed just before the apex. The apical excision and the apical lobes are rather variable; in some specimens the excision is angular and wider than deep, in others it is semi-elliptical or semicircular, with the lobes widely rounded. Intermediate degrees of depth and angularity also occur. The transverse ridges on the process are sharper than in the ♀. Tergites dull, closely and finely punctured, the punctures smallest on the second but not much smaller or closer than on the other tergites. The punctures on the first tergite are a little smaller than those on the vertex. Pygidial area

subquadrate, strongly punctured. Sternites shining, their depressed apical margins smooth and impunctate; the second fairly closely, finely and shallowly punctured, the following sternites sparsely and coarsely punctured, the seventh dull and closely punctured. Median area of the clypeus with a carina which is flattened anteriorly and projects as a tooth beyond the anterior margin; on each side of it the anterior margin is strongly concave, so that its outer corners are sharply angular. Face narrower than in the ♀, the least width being only two-thirds of the length. Posterior ocelli separated from the eyes by a distance equal to their own diameter.

Anterior metatarsi with five spines on the outer margin. Otherwise like the ♀.

Sawmills, S.R., December (G. Arnold). Nesting in loose sandbanks, 3 ♀♀, 11 ♂♂. Types in R.M. coll. (R.M. and T.M. colls.)

*O. flavicornis* n.sp. (figs. 22 and 22 a-c).

♀. 4.3 mm. long. Black. The following parts pale lemon yellow: mandibles excepting their fusco-ferruginous apices, spots on the coxae and trochanters and the whole of the middle trochanters, femora, tibiae and tarsi, excepting a black streak on the back of the posterior femora, pronotal collar and tubercles, two large round spots on the scutellum, the middle of the metanotum, apical transverse bands on the first to fifth tergites, those of the first and second interrupted in the middle, and lateral streaks on the apical halves of the second and third sternites. Flagellum ochreous; metanotal squamae translucent yellowish, the epinotal process brown at the base and testaceous at the apex, pygidial area fusco-ferruginous. Tegulae testaceous in front, pale yellow behind. Wings hyaline, veins and stigma pale brown. Face, clypeus, temples and mesopleurae with silvery pubescence, mesonotum with a sparse, yellowish and decumbent pubescence. Abdomen with a very short greyish pubescence, the sternites with long, exserted and yellowish hairs. Pygidial area sparsely covered with yellowish hairs. Upper face, vertex and occiput with large deep punctures which are almost contiguous, the temples more shallowly punctured, and like the occiput with the usual transverse striae. Mesonotum with large and deep punctures, larger than the largest on the vertex, those in the middle separated by slightly shining spaces which are as wide as the punctures, those between the middle and the lateral margins separated by even wider spaces. Scutellum sparsely punctured, the punctures large but shallow. Mesopleurae strongly punctured, the sculpture somewhat obscured by the pubescence. Metapleurae with widely spaced strong transverse striae. Epinotum dull; the fundamental sculpture consists of a fine reticulate puncturation, over which on the sides is superimposed a fairly strong transverse rugosity, on the declivity and lateral areas of the dorsum a reticulate rugosity, and on the median area some oblique rugae. Tergites strongly and closely punctured, especially the first and second, the puncturation of all finer at the extreme base and apex than in the middle. On the first and second the punctures are contiguous, very large and deep, much larger than those on the mesonotum, those on the

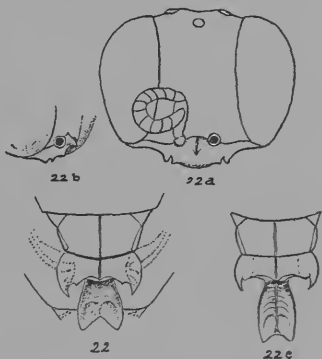


Fig. 22. *Oxybelus flavicornis*, ♀, posterior half of thorax; a, head; b, lateral view of clypeus; c, posterior half of thorax of the race *nyassae* ♂.

second not smaller than those on the first. Sternites shining, sparsely and shallowly punctured. Pygidial area slightly longer than wide at the base, coarsely punctured, the apex narrowly rounded. Anterior margin of the median area of the clypeus feebly convex, its lateral angles acute and separated by a deep cleft from a strong tooth beyond them; at the base there is a median carina which ends in a free nasiform tooth, which is more easily seen from the lateral aspect (see fig. 22 *b*). Antennae decidedly short and stout, the scapes not reaching to the middle of the face. Posterior ocelli separated from the eyes by a distance not greater than their own diameter. Shoulders of pronotal collar rectangular; pronotal tubercles, viewed from above, produced outwardly into a dentiform angle. Scutellum and metanotum with sharp median carinae, the former with narrow, fusco-hyaline lateral lamellae. Metanotal squamae transparent, as long as the scutellum in the middle, curved upwards and outwards, except the apical portion which is vertical, the apex acute. Epinotal process almost foliaceous, the lateral margins being only slightly raised, angularly and deeply excised at the apex, as wide as long at its widest part (beyond the middle), as long as the scutellum, amplified gradually from the base to a little beyond the middle and thence very slightly narrowed to the apex. It has a median longitudinal ridge and a semicircular one, more or less transverse, at about the middle; the ends of the transverse one do not extend as far as the apical angles.

♂. 3.5-4 mm. long. First three joints of the flagellum slightly tinged with brown above, the whole of the apical joint brown. The yellow on the posterior femora is more extensive than in the ♀, only the base and the basal two-thirds of the inner face being black. Metanotum black in the middle, the yellow spots on the scutellum smaller than in the ♀. Lateral areas of the dorsum and the declivity of the epinotum more strongly sculptured than in the ♀, reticulate rugose.

Pygidial area fusco-ferruginous, subquadrate, slightly longer than wide at the base, hardly wider there than at the apex. Otherwise like the ♀ in colour, sculpture and pubescence.

Median area of the clypeus with an angular tooth on each side, the anterior margin concave, carinate longitudinally in the middle, the carina ending in a point which projects a little beyond the anterior margin. Otherwise like the ♀.

Sawmills, S.R., December (G. Arnold); Willowmore, C.P.; Bulawayo and Sanyati River, S.R.; Palapye Road, Bechuanaland (R. H. R. Stevenson). Nesting in loose sand. A very distinct species, characterised by the colouring, short antennae and the strong puncturation of the first two tergites.

*O. flavicornis*, race *nyassae* n.r. (fig. 22 *c*).

♂. 3.8 mm. long. Flagellum concolorous, the apical joint not darker than the rest. Basal two-thirds of the fore and middle femora and the whole of the hind femora fusco-ferruginous. Pygidial area ferruginous. The yellow spots on the scutellum almost obsolete. Puncturation of the mesonotum and first two tergites even coarser than in the type of the species, and with larger spaces between the punctures. Scutellum shorter, the posterior margin less convex. Metanotal squamae shorter, only three-fifths as long as the epinotal process measured in the middle (almost as long in the type of the species). Epinotal process longer and narrower, widest at about the basal third, thence very slightly narrowed towards the apex, the apical margin arcuately emarginate; it is traversed by a very strong longitudinal carina from whence diverge five transverse and curved carinae on each side. Pygidial area longer than in the type of the species, parallel-sided, twice as long as wide at the base. Otherwise like the type of the species.



Langenburg, Lake Nyassa, December (Fülleborn), 1 ♂. Type in the Berlin Museum.

*O. willowmorensis* n.sp. (figs. 23, 23 a and b).

♀. 7 mm. long. Black. The following parts pale lemon yellow: upper side of the anterior tibiae and extreme apex of the anterior femora, the middle femora at the apex and the greater part of the upper side of the middle tibiae, the basal third of the hind tibiae above, the pronotal tubercles, the tegulae in front, two oblique streaks on the scutellum, the metanotum including the inner half of its squamae, the apical half of the epinotal process, apical transverse bands on the first four tergites and the whole of the fifth tergite. The band on the first is interrupted in the middle, that on the second is narrowed in the middle but unbroken, and the posterior margins of the bands on the second to fourth tergites are serrated. Tarsi brown or reddish brown, with the apical joint paler. Mandibles reddish ochreous, the apical third piceous.

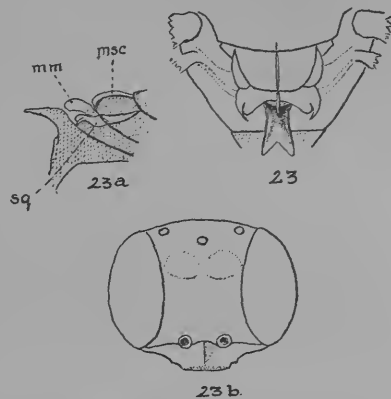


Fig. 23. *Oxybelus willowmorensis*, ♀, posterior half of thorax; a, lateral view of the same; b, head.

Scapes brownish black, the flagellum brown basally and becoming reddish ochreous towards the apex. Extreme apex of pygidium fusco-ferruginous. Wings hyaline, the veins ochreous. Clypeus and face with a dense silvery pubescence. Temples, mesothorax and tergites with whitish pubescence, scanty except on the mesonotum, scutellum and apical margins of the tergites. Face with a shallow but distinct concavity on each side a little below the level of the anterior ocellus; the pubescence ends abruptly at the upper margin of the concavity. Above it the face and vertex are sharply punctured, the punctures not close, the spaces between them shining. Pronotal collar linear in the middle, only the lateral angles being visible from the dorsal aspect. Mesonotum and scutellum sharply and evenly punctured, the punctures a little larger than those on the middle of the vertex, most of them separated by shining spaces twice as large as the largest puncture. Mesopleurae punctured in front like the mesonotum, coarsely reticulate-rugose behind and below. Metapleurae transversely striate. Sides of the epinotum shining, with a few transverse rugae above and near the hind margin. Declivity and lateral areas of the epinotal dorsum dull, punctulate, with a reticulate rugosity superimposed. Median area of the epinotum shining, with three or four oblique rugae at the sides, the area underneath the process reticulate. Tergites closely and evenly punctured, the punctures on the first smaller than those on the mesonotum and not much larger than those on the second. Pygidial area triangular, coarsely punctured, longer than wide at the base, the apex narrowly truncate. Sternites shining, shallowly, sparsely and coarsely punctured, the apical half of the sixth sternite dull, closely and finely punctured. Spines on the anterior tarsi ochreous, on the middle and hind legs pale yellowish white; the calcaria ochreous. Mandibles fairly long and narrow, with a tooth at the basal third of the inner margin. Median area of the clypeus feebly carinate in the middle, the anterior margin straight, with a blunt angle on each side. Posterior ocelli separated from the eyes by a distance not greater than their own diameter. Scutellum sharply carinate lengthwise in the middle, the

lateral margins with high, transparent and curved lamellae; the metanotum is strongly carinate in the middle, the carina lamelliform, its posterior end free, rounded and projecting beyond the posterior margin. Metanotal squamae convex outwardly, the apex bifid, the outer lobe unciform, the inner rounded. The epinotal process is moderately widened from the base to the apex, the latter deeply and angularly excised, the apical angles feebly rounded; it is as long as the scutellum and metanotum united, and two-thirds longer than it is wide across the apical angles. Anterior metatarsus with six spines on the outer margin, middle and hind tibiae with rather long spines on the outside.

Willowmore, C.P. (Dr H. Brauns), November. Type in coll. Brauns.

*O. nasutus* Bischoff (figs. 24, 24 a and b). Schultze, *Reise Süd Afr.* v, 2, p. 115, ♀. 1913.

♀. 6.5 mm. long. Black. The following parts pale straw yellow: pronotal collar excepting the lateral angles, pronotal tubercles, lateral spots on the posterior half of the scutellum, the inner hind margin of the metanotal squamae, narrow preapical bands on tergites 1-5, those on the first and second narrowly interrupted in the middle, apices of the fore and middle

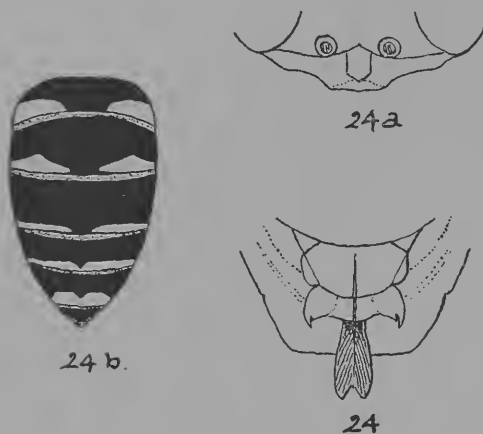


Fig. 24. *Oxybelus nasutus*, ♀, posterior half of thorax; a, clypeus; b, abdomen.

femora and all the tibiae and tarsi. Mandibles straw yellow, the apical half reddish brown. Scapes blackish, flagellum brown, paler below, the last four or five joints ochreous. The lateral lamellae of the scutellum and the metanotal squamae are whitish translucent, the epinotal process translucent and honey yellow, black at the base. Wings hyaline, the veins pale ochreous, the stigma brown. Tegulae pale testaceous, the axillary sclerite black in the middle with a pale ochreous margin. Face and clypeus clothed with a dense silvery pubescence which obscures the sculpture. A similar but less dense pubescence lies on the temples. Vertex and thorax with a rather long, erect and whitish pubescence, fairly abundant, more abundant than in the majority of our species, especially on the mesopleurae. Vertex finely and closely punctured, slightly shining, the occiput with the usual transverse striation intermixed with punctures. Mesonotum and scutellum with larger punctures than the rest of the body, moderately shining between the punctures, which are for the greater part separated by spaces about three times the diameter of the largest puncture. Mesopleurae dull and rugoso-punctate. Lateral areas of the epinotal dorsum dull, and like the declivity, finely reticulate rugose. Ter-

gites closely and rather finely punctured, the puncturation on the first and second distinctly finer than on the mesonotum. Sternites shining, the second coarsely punctured, the rest with shallow punctures near the apical margin. Clypeus with a flat nasiform protuberance in the middle; it is exerted obliquely, not reaching as far as the anterior margin, and is longer than wide and bluntly angular at the apex. The posterior ocelli are separated from the eyes by a distance equal to their own diameter. Epinotal process foliaceous, closely and obliquely striolate, twice as long as its greatest width, gradually widened from the base to the apex, which is narrowly and angularly emarginate, the apical lobes rounded.

Rooibank, hinterland of Walfish Bay, S.W.A., May (Schultze). Type in the Berlin Museum.

This species is clearly characterised by the clypeal protuberance, the long pubescence on the thorax and the shape of the epinotal process.

*O. pallidus* n.sp. (figs. 25, 25 a and b).

♀. 5.5 mm. long. Black, middle and hind femora, axillary sclerites and apical segment of the abdomen reddish ochreous. Mandibles excepting the

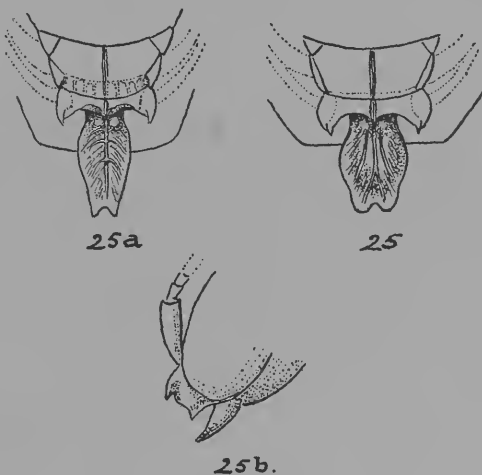


Fig. 25. *Oxybelus pallidus*, ♀, posterior half of thorax; a, the same of the ♂; b, lateral view of the clypeus, ♀.

apex, scapes and flagellum, forelegs, middle and hind tibiae and tarsi, pronotal collar and tubercles, a large macula on each side of the scutellum, inner half of the metanotal squamae and transverse bands on the first four tergites, straw yellow. The band on the fifth tergite ochreous. The tibiae have a reddish tinge, and the first four joints of the flagellum are pale brown above. The transverse bands on the tergites are unbroken except on the first two, where they are narrowly interrupted in the middle. Sternites 2-4 reddish brown in the middle, the fifth, sixth and seventh reddish ochreous. Epinotal process foliaceous, ferruginous in the middle, paler and somewhat yellowish on the lateral margins. Axillary sclerite reddish brown; wings hyaline, veins brownish yellow. Clypeus, lower half of the face, temples and mesopleurae with silvery pubescence, that on the upper half of the face, vertex and mesonotum with a yellowish tinge. Upper half of face, vertex and mesothorax closely punctured, the punctures not large, separated by spaces about as

large as the punctures. Scutellum slightly shining, a little more coarsely punctured than the mesonotum. Sides of epinotum shining, transversely and very superficially striate. Lateral areas of the epinotal dorsum very finely and closely punctured and dull, the median area indistinctly defined, rugulose and with traces of fine oblique striae. Epinotal process widest at the basal fourth, a little more than one-third longer than wide, the sides convex, the apex arcuately emarginate in the middle, the apical lobes rounded. The surface of the process is finely and obliquely striate, with a strong median longitudinal carina which is bifid from the middle onwards; on each side of it there is a shorter carina. The scutellum and metanotum are strongly carinate lengthwise in the middle; the former has the usual translucent marginal lamellae, and the squamae of the metanotum are short and wide. First two tergites very strongly punctured; the punctures are twice as large as the largest on the mesonotum and three times as large as those on the third tergite.

Pygidial area large, slightly longer than wide at the base, the apex subacute, coarsely punctured and clothed with pale golden setae. Sternites shining, the second and the sides of the third to fifth coarsely and not closely punctured. Median area of the clypeus with a short carina which ends before the middle in a fairly acute tooth. Face narrowest in the middle, half as long again as it is wide at that point. The epinotal process is three-fourths the length of the mesonotum.

♂. 5.5 mm. long. The middle of the anterior margin of the clypeus is ferruginous; tarsi and outer face of the tibiae paler than in the ♀, almost yellowish white. Flagellum reddish ochreous above, paler below. The maculae on the scutellum are darker than in the ♀. Sternites black, only the seventh fusco-ferruginous, the pygidial area ferruginous. Clypeus carinate longitudinally in the middle, the carina reaching almost as far as the anterior margin, not ending in a free tooth as in the ♀. Metanotal squamae more acute than in the ♀. The epinotal process, as is usual in this sex, is longer and narrower than in the ♀. It is gradually widened from the base to the basal third, where it is widest, thence narrowed towards the apex; its length is three-quarter times greater than its greatest width. The apical margin is arcuately excised, the apical lobes rounded, the upper surface is carinate longitudinally in the middle, obliquely striolate and has three curved transverse carinae on each side. The epinotal process is four-fifths the length of the mesonotum and fully two-thirds of it projects beyond the posterior margin of the epinotal dorsum. Otherwise like the ♀.

Kilimatinde, E. Africa, 1 ♀ (Claus); Kihu River (?), E. Africa, 1 ♂ (C. Schröter). Types in the Berlin Museum.

The ♀ of this species is not unlike *O. lamellatus* Ol. in the shape and fine sculpture of the epinotal process, but the puncturation of the first two tergites is very different.

*O. angustus* Saussure (figs. 26 and 26 a-e). Grandidier, *Hist. Madagasc.* xx, p. 563, ♂. 1892.

♀ (hitherto undescribed). 6-8 mm. long. Black. A more or less triangular and large mark on each side of the first and second tergites, and transverse bands on the apical half or more of the third to fifth tergites, pale lemon yellow. The bands on the third to fifth tergites are slightly narrowed in the middle, but sometimes they are broken there. The band on the fifth covers the whole of the segment excepting the basal fourth. The depressed apical margins of the tergites are stramineous. Pronotal collar usually entirely black, occasionally and more particularly in the smaller examples, dirty lemon

yellow. Scutellum sometimes with a small yellow spot on each side, and the inner half of the otherwise hyaline metanotal squamae are also yellow. Antennae black, the last three joints of the flagellum ferruginous below. Mandibles ferruginous, the apices black. Anterior tibiae and tarsi ferruginous, middle and hind tarsi blackish, with the last two joints fusco-ferruginous. Middle tibiae on the underside, and a small spot at the base of the middle and hind tibiae, yellow. Epinotal process ferruginous, flavo-ferruginous at the sides, blackish at the base. Tegulae stramineous, the axillary sclerite blackish with yellow margins. Wings hyaline, the veins yellowish brown, the stigma, costa and subcosta, brown. Face and temples without silvery pubescence, clothed like the rest of the body only with a short and very sparse greyish pubescence, which on the vertex is a little longer and erect.

Head closely and finely punctured, dull; mesonotum dull, closely punctured, the punctures nearly contiguous, not large but a little larger than those of the vertex. Mesopleurae shining, more strongly punctured than the mesonotum, the punctures separated by spaces about three times the diameter of one of the punctures. Metapleurae and sides of the epinotum transversely striato-rugose, the rugae becoming thinner posteriorly, the spaces between them shining. Scutellum coarsely and fairly distantly punctured, carinate lengthwise in the middle, the posterior third obliquely depressed, the lateral margins raised very slightly and ending posteriorly in a sessile triangular tooth. Metanotum coarsely rugose in the middle and sharply carinate, the carina ending in a free, rounded and cultrate process (this is more easily observed if the insect is viewed from the side). Metanotal squamae rostriform, bifid at the apex, the outer lobe acute and directed downwards, the inner blunt and horizontal. Declivity and lateral areas of the epinotal dorsum dull, very finely reticulate-punctate; median area of the epinotum slightly shining, with a few oblique rugae above, and reticulate-rugose below. Epinotal process foliaceous, lanceolate, horizontal except the basal third, widest at about the basal third thence moderately narrowed towards the apex, which is angularly emarginate and bidentate, longitudinally carinate in the middle and obliquely striate on each side of the carina. It is slightly longer than the combined lengths of the scutellum and metanotum measured in the middle. Tergites closely punctured, the punctures on each segment becoming gradually larger towards the apex, the apical margins very closely and finely punctured. The punctures are coarsest on the first two tergites, those of the second not larger than those of the first, but a little smaller and shallower than the punctures on the mesonotum. Pygidial area triangular, the sides distinctly arcuate, hardly longer than wide at the base, coarsely and fairly closely punctured, sparingly covered with pale brownish yellow setae, the apex acute. Sternites shining, the second coarsely and sparsely punctured, the third to fifth sparingly punctured basally, their depressed apical halves smooth. Clypeus carinate lengthwise in the middle, the anterior margin moderately convex and with

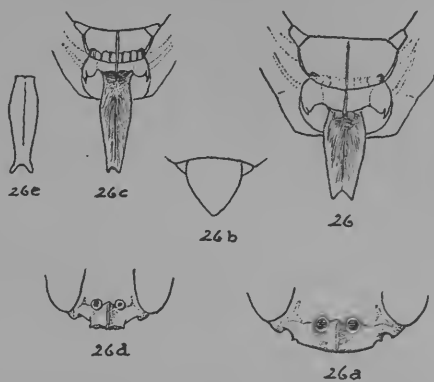


Fig. 26. *Oxybelus angustus*, ♀, posterior half of thorax; a, clypeus; b, pygidium; c, posterior half of thorax of ♂; d, clypeus of ♂; e, another form of epinotal process of the ♀.

a very small tooth on each side; between these teeth and the base of the mandibles the anterior margin is concave. Face narrowest in the middle, nearly as wide there as it is long. Anterior metatarsi with seven ferruginous spines, the calcaria and spines on the middle and hind legs ochreous.

♂. 5.3–6.5 mm. long. Mandibles paler than in the ♀. Flagellum brownish black above, reddish ochreous below. Pronotal collar and tubercles, the upper surface of all the tibiae, and apical spots on the fore and middle femora, lemon yellow. The yellow markings on the abdomen are brighter than in the ♀, and the scutellum always has a spot of lemon yellow on each side in front. Epinotal process pale yellow, translucent at the sides, blackish at the base and often more or less reddish for a short distance just behind the apex. The tarsi are paler than in the ♀, the tegulae are very pale lemon yellow in front and the seventh tergite is reddish or reddish brown. Otherwise coloured like the ♀.

Clypeus and face with a dense silvery pubescence. The pubescence on the mesothorax is more abundant than in the ♀ and of a pale yellowish colour. The sculpture is similar to that of the ♀ but the puncturation is relatively finer and closer. On the mesonotum the punctures are separated by spaces less than the diameter of a puncture, so that the sculpture is almost reticulate-punctate. The posterior third of the scutellum is more abruptly depressed and very distinctly tricarinate on each side of the median carina. The epinotal process is much longer than in the ♀ and more rapidly attenuated beyond the basal third. The apical emargination is as deep as in the ♀ but somewhat variable. The emargination is usually arcuate rather than angular, and the apical teeth or lobes are sometimes divergent (see fig. 26 e). The median carina of the process is more prominent than in the ♀. The process projects beyond the apical margin of the first tergite and measured from the base to the extreme apex is fully as long as the mesonotum plus one-third to one-half of the scutellum. The second to sixth tergites have the lateral spines well developed, and the sixth has also a blunt tubercle on each side at the apical margin. Pygidial area quadrate, the apical margin shallowly concave. Eighth ventral segment sharply bidentate at the apex, deeply and arcuately excised between the teeth. Median area of the clypeus somewhat produced, longitudinally carinate in the middle, the anterior margin rectangular on each side. Face one-third longer than wide in the middle. Otherwise like the ♀.

Willowmore, C.P., December; Lichtenburg, Transvaal, January; Reddersburg, O.F.S., December (Dr H. Brauns). R.M. and T.M. colls.

There are five closely allied but quite distinct species about to be considered for which detailed descriptions appear to be of doubtful value. These are: *lingula* Gerst., *aethiopicus* Cam., and three new species, *curviscutis*, *rubrocaudatus* and *lepturus*. In all of them the sculpture is very similar, the colour pattern of the abdomen is the same in three of them, *curviscutis*, *rubrocaudatus* and *lepturus*, the differences in the structure of the clypeus are very slight, especially in the ♂♂, and the shape of the epinotal process in all is made apparent more easily by means of illustrations than by any amount of verbal description. For these reasons I believe it will be more helpful to the reader to describe one of the group in detail, *i.e.* *lingula*, and then to arrange the diagnostic characters of the five species in the form of a comparative table, leaving general observations for inclusion in the body of the text.

*O. lingula* Gerstaecker (figs. 27, 27 a-e, and 32). *Zeitschr. f. d. ges. Naturw.* xxx, p. 26, nota, ♀. 1867.

*O. pinnatus* Sauss. Grandidier, *Hist. Madagasc.* xx, pp. 559, 562. 1890.

*O. kalaharicus* Bisch. Schultze, *Reise Süd. Afr.* v, 2, p. 114, ♂. 1913.

*O. striatiscutis* Cam. *Rec. Albany Mus.* p. 261, ♀. 1905.

*O. spiniferus* Cam. *Trans. S.A. Phil. Soc.* p. 226, ♀ (?). 1905.

♀. 6-8 mm. long. Black. The following parts pale whitish yellow: the pronotal collar above, the posterior margin of the pronotal tubercles, rarely a small spot on each side of the scutellum, a lanceolate mark widest medially on each side of the first tergite, a more or less triangular mark on each side of the second tergite, and narrow apical bands widest medially and interrupted in the middle on the third and fourth tergites. Extreme apical margins of the first five tergites and of the second to fourth sternites pale stramineous. Mandibles excepting the piceous apex, flagellum, tarsi, fore and middle tibiae ferruginous; the middle tibiae somewhat fuscous above. Posterior tibiae brownish black. Femora black, the anterior pair somewhat ferruginous below, the middle pair also of that colour at the extreme apex below. The middle and hind tibiae have a minute spot of dirty white at the base above. Scapes dark brown, paler at the base and apex. Tegulae testaceous, the axillary sclerite piceous. Wings hyaline, veins dark reddish brown. Metanotal squamae translucent and flavo-hyaline. Epinotal process dark brown or almost black, the margins at the sides and apex pale ferruginous. Face and temples with a fairly sparse whitish pubescence; on the thorax the pubescence is of the same colour, very short and inconspicuous. Face dull, finely and closely punctured; the punctures increase in size towards the vertex, where they are separated by spaces two or three times the diameter of a puncture. Mesonotum closely punctured, the punctures fully twice as large as the largest on the vertex and arranged for the greater part in irregular transverse rows, the spaces between the latter somewhat shining. Scutellum longitudinally carinate in the middle, more coarsely and more sparsely punctured than the mesonotum, the posterior fifth with three short longitudinal carinae on each side. The lateral margins are slightly lamellate and reflexed, the lamella ending posteriorly in a short sessile tooth. Mesopleurae much more sparsely punctured than the mesonotum, the punctuation of the same size as on that part. Metanotum with a high median carina, which is cultrate and rounded at its free apex; the squamae are yellowish hyaline, bifid at the apex, the inner lobe rounded, the outer acute and directed downwards. Sides of the epinotum with a greasy lustre, very finely striate, with a few rugae above and near the hind margin. Declivity, including the median triangle, and the lateral areas of the epinotal dorsum dull, very finely reticulate, with a sparse network of larger rugae superimposed. Median dorsal area on each side of the epinotal process slightly shining, with a few fine and oblique rugae. The epinotal process is foliaceous, ovate, nearly horizontal except at the base, widest at about the basal third, carinate longitudinally in the middle, with three or four oblique carinulae on each side, the apex with a small semi-

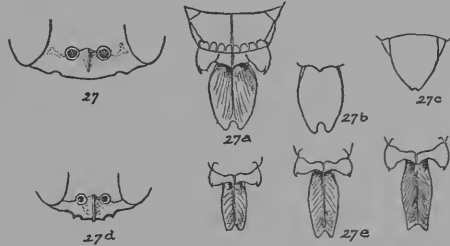


Fig. 27. *Oxybelus lingula*, ♀, clypeus; a, epinotal process; b, another form of the same; c, pygidium; d, clypeus of ♂; e, three forms of the epinotal process in the ♂.



elliptical excision, the apical teeth rounded. Apical margins of tergites 1-5 closely and finely punctured. The first tergite is coarsely punctured on the horizontal part, the punctures larger than those of the mesonotum and separated by wide spaces. The second tergite closely punctured basally, more coarsely and less closely elsewhere, the punctures a little smaller than those of the first tergite. The third and fourth tergites with puncturation like the second, but smaller. The fifth tergite is more strongly punctured than the fourth, but less than the second. Pygidial area scutiform, the basal two-fifths of the sides parallel, the rest converging towards the apex which is narrowly truncate and feebly excised in the middle; the surface is closely and fairly coarsely punctured and covered with pale yellowish decumbent setae. Sternites shining, the second with large, elongate and shallow punctures, the sixth finely and fairly closely punctured, the rest with a few punctures on their basal halves. Anterior margin of clypeus feebly convex, with a shallow excision on each side of the median area; the latter has a short longitudinal carina which does not reach beyond the middle. Face one-fifth longer than wide in the middle. Posterior ocelli separated from the eyes by a space a little less than the diameter of one of the ocelli. Spines on the legs pale ferruginous, the anterior metatarsus with seven spines.

♂. 5-6 mm. long. The yellow markings are of a deeper yellow than in the ♀, *i.e.* lemon yellow. The whole of the pronotal collar and the tubercles are yellow, and the spots on the scutellum are larger than in the ♀. The fifth tergite has a transverse apical band of yellow, and there is a small spot of yellow in the middle of the sixth tergite near its apical margin. The yellow mark on each side of the first tergite is acuminate medially and not truncate as in the ♀, and the bands on the second to fifth tergites are narrower and less dilated medially. Flagellum brownish ochreous, paler below, the basal joints darker than the rest, the scapes sometimes with a yellow streak in front. Tegulae testaceous, with a pale yellow spot in front, the axillary sclerite pale yellow. Epinotal process dark brown in the middle, translucent and pale amber-coloured elsewhere. Tibiae lemon yellow, darker below, the middle and hind pair brown below. Anterior and middle femora with the outer apical half or two-thirds lemon yellow, the inner side at the apex fusco-ferruginous. Tarsi stramineous, becoming darker or ochreous towards the apical joint. The depressed apical margins of the second to fifth sternites narrowly flavo-testaceous, the apical half of the pygidium fusco-ferruginous. Pubescence and sculpture as in the ♀, but the sides of the epinotum are strongly transversely rugose right across, and somewhat punctate between the rugae. The metanotal squamae are shorter, especially the outer lobe. The epinotal process is narrower and relatively longer than in the ♀; it is oblong, slightly narrowed apically and basally, widest at the basal third, strongly carinate longitudinally from the base to the apical excision, which is less angular than in the ♀. The apical lobes or teeth of the process are widely rounded, and the carinulae on each side are less distinct than in the ♀. Near the apex the process is a little concave on each side of the middle. Tergites 2-6 with well developed lateral spines, which are quite half as long as their respective tergites. The sixth has an inner pair of short teeth near the apical margin. Pygidial area subquadrate, a little longer than wide, coarsely punctured, the apical margin shallowly concave. Median area of the clypeus with a strong longitudinal carina which reaches the apical margin; the latter has two triangular teeth on each side. Face nearly twice as long as wide in the middle. Otherwise like the ♀.

The colour in this species is somewhat variable on the scapes and legs. In some examples in both sexes the front of the scape is yellow, and the

middle tibiae in some ♀♀ have a pale yellow streak on the outside. Some female Rhodesian examples have the epinotal process widest near the middle and the last three joints of the tarsi yellowish red, but they can hardly be separated as a distinct race on those grounds since the same form occurs at Willowmore, C.P., side by side with the typical form. The sculpture, and in a lesser degree the shape of the epinotal process in the ♂ are decidedly variable. The longer forms of the process with a wide apical excision are more finely obliquely rugose than the short ones with small apical excisions. The latter also have fewer oblique rugae.

Willowmore, Sundays River and Port Elizabeth, C.P.; Lichtenburg, Transvaal (Dr H. Brauns); Bulawayo, Sawmills and Victoria Falls, S.R., November to April. (R.M. and T.M. colls.)

The identification of this species is based on a paratopotype (leg. Lichtenstein) in the Berlin Museum which was compared with the type by Dr Bischoff and found to be identical. The type of *pinnatus* Sauss. in the S.A. Museum collection has also been examined by me. In regard to *striatiscutis* Cameron the identification is not so certain, since although I have seen the type in the British Museum I was not able at the time to compare it with undoubted specimens of *lingula*. Cameron's remarks concerning the affinity of this species with *ruficaudis* are quite misleading, since the epinotal process is foliaceous, whereas in *ruficaudis* it is gutter-shaped. Cameron's *spiniferus* is probably a synonym of *lingula*, but the slipshod nature of that author's description makes it difficult to identify the species with any certainty. It is described as ♀, but the reference to the lateral spines of the tergites suggest that it is a ♂. The "scutellar plate" of that author is obviously the epinotal process, the "scutellum" (9th line from top, p. 227) is the metanotum and the "metanotum" (14th line from top of page) is the epinotum. From the context it is also evident that the legs are yellow, but that "the coxae and trochanters, the four front femora broadly above, and the hind femora except at the apex" are black, and not "clear yellow\*."

*O. curviscutis* n.sp. (figs. 28 and 34).

♀. 6.2-6.5 mm. long. ♂. 4.3-5 mm. long. October to February, Sawmills and Bulawayo, S.R.; Tanganyika Territory. For description see comparative table, pp. 108-9. Types in the R.M. (R.M. and T.M. colls.)

*O. rubrocaudatus* n.sp. (figs. 29 and 34).

♀. 6-7.5 mm. long. ♂. 4.7-5.6 mm. long. November to April, S. Rhodesia and Scottsburg, Natal; Tanganyika Territory. For description see comparative table, pp. 108-9. Types in the R.M. (R.M. and T.M. colls.)

*O. aethiopicus* Cameron (figs. 30 and 33). *Trans. S.A. Phil. Soc.* xvi, p. 328. 1906.

♀. 7-7.5 mm. long. ♂. 5-6.3 mm. long. October to February, Pearston, C.P. Ormiston, E. Griqualand, and Willowmore, C.P. For description see comparative table, pp. 108-9. (R.M. and T.M. colls.)

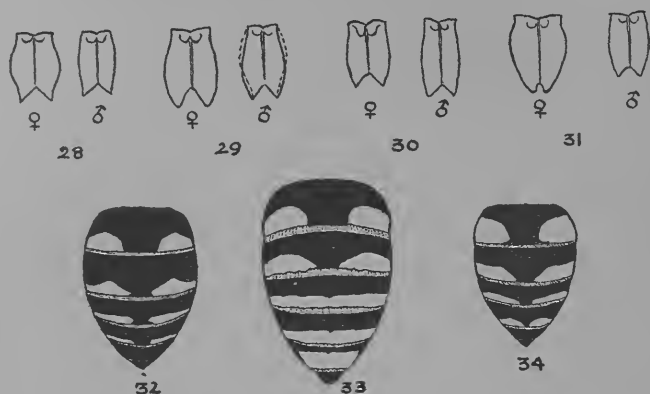
*O. lepturus* n.sp. (figs. 31 and 34).

♀. 6.7-7 mm. long. ♂. 4.7-5 mm. long. September to November, Bulawayo, Sanyati Valley and Druids Mine, S.R. For description see comparative table, pp. 108-9. Types in coll. Stevenson. (R.M. coll.)

\* I desire to express my grateful appreciation of the kind consideration of the Berlin Museum and Dr H. Bischoff in submitting to me for study not only the whole of their collection of Ethiopian *Oxybelus* but also the types of that genus, whereby the recognition of the species *acutissimus*, *kalaharicus* and *nasutus* has been greatly facilitated.

Species	Epinotal process	Pygidial area	Colour of middle and hind femora	Clypeus	Colour of tegulae and axillary sclerite	Colour of antennae	Colour of maculae on the abdomen	Colour of posterior metatarsi	General remarks
<i>lingula</i> Gerst.	Widest across the basal third or near the middle; apical excision narrow and round; colour dark brown or black, ferruginous at the sides and apex; rugose on each side of the middle, the rugae parallel to median carina	Black, as wide at the base as long, covered with yellowish white setae	Black	Carina highest in the middle, not extending as far as the apical margin	Tegulae testaceous, axillary sclerite black or piceous, with a paler margin	Scapes blackish behind, dirty yellow in front; flagellum ferruginous or umber, paler below, the basal joints darker above	Cream, fifth tergite without pale yellow markings, entirely black	Blackish	The pubescence on the thorax is whitish; the sides of the epinotum more finely striated than in the other four species
<i>curviscutis</i> n.sp.	Widest across the middle; apical excision wide and angular, apical teeth acute; colour piceous, the outer third of the sides reddish brown; strongly convex transversely and lengthwise at about the middle; irregularly rugose	Black, somewhat longer than wide, setae yellowish white. (In some specimens the apex is slightly reddish, and in E. African specimens dark red with brown margins)	Red	Carina highest beyond the middle, extending as far as the anterior margin	Tegulae fusco-ferruginous, with a yellow spot in front; axillary sclerite black	Scapes pale yellow, with a black streak behind; flagellum brownish umber above, pale yellow umber below	Chrome yellow, fifth tergite without yellow markings, entirely black	Fusco-ferruginous	—
<i>rubrocaudatus</i> n.sp.	Widest at the middle or a little beyond it; apical excision angular or subangular, not deeper than wide, the apical teeth not acute; colour piceous; obliquely rugose, the rugae less regular than in <i>lingula</i>	Red, longer than wide at the base, setae yellowish white	Black	Carina highest in the middle, reaching the apical margin	Tegulae blackish, axillary sclerite black. (In specimens from Tanganyika Territory the tegulae are amber brown)	Scapes blackish, with a dirty yellow streak in front; flagellum pale umber, lighter below, the first three or four joints brown above	Chrome yellow, fifth tergite without yellow markings, the apical margin ferruginous	Blackish, the apex paler or fusco-ferruginous	—
<i>aethiopicus</i> Cam.	Widest a little beyond the middle, almost parallel-sided; apical excision angular, as wide as, or wider than deep, the apical teeth acute; black, with brownish ochreous or ferruginous margins	Black, as long as wide at the base, setae yellowish white	Middle femora black, with a yellow streak on the whole length outside; hind femora black, with a yellow spot outside at the base	Like that of <i>lingula</i> q.v.	Tegulae stramineous, the posterior margin brown. Axillary sclerite blackish, with ochreous lateral and hind margins	Scapes black; flagellum black, becoming fusco-ferruginous below towards the apex	Pale lemon yellow; bands on the third to fifth tergites entire, that on the fifth covering the whole of the segment and rectangular in shape	Black	Depressed apical margins of the tergites stramineous; pubescence on the thorax greyish brown
<i>lepturus</i> n.sp.	Widest at, or a little before the middle; apical excision narrow and round; apical teeth rounded; colour piceous; closely and finely, obliquely rugose, almost striate	Red, distinctly longer than wide at the base; setae golden	Red or blackish red	Highest in the middle, fairly low, extending almost to the anterior margin	Tegulae fusco-testaceous, the margins paler; axillary sclerite blackish	Scapes blackish behind, reddish yellow in front; flagellum pale ferruginous	Chrome yellow, fifth tergite entirely black	Black	—

Species	Epinotal process	Pygidial area	Colour of middle and hind femora	Colour of tegulae and axillary sclerite	Colour of antennae	Colour of sternites	Colour of maculae on the abdomen	General remarks
<i>lingula</i> Gerst.	Widest at about the middle; apical excision angular but not deep, the apical teeth fairly acute; obliquely striate; colour black, apical third ochreous, margins translucent amber	Black, apical margin fusco-ferruginous	Middle femora black, outer upper half yellow, hind femora black, extreme apex yellow	Tegulae hyaline yellow, axillary sclerite lemon yellow	Scapes black, yellow in front; flagellum fusco-ferruginous	Black	Chrome yellow	In Rhodesian specimens the apical excision of the epinotal process is shallow and round, and the striae are more transverse; the flagellum is paler apically, more reddish yellow
<i>curviscutis</i> n.sp.	Widest at about the middle; apical excision angular, the apical teeth acute; less than twice as long as its greatest width; transversely and irregularly striate; colour as in <i>lingula</i>	Black. (E. African specimens sometimes red or reddish brown)	Middle femora ferruginous, the outer upper third yellow; hind femora ferruginous	Tegulae hyaline testaceous, with a straw yellow spot in front; axillary sclerite black	Scapes black, yellow in front; flagellum ferruginous	Black	Chrome yellow	—
<i>rubrocaudatus</i> n.sp.	Widest at about the middle; apical excision angular, the apical teeth acute; twice as long as its greatest width, or a little less; obliquely and finely striate; colour translucent reddish yellow, darkest at the base	Ferruginous	Middle femora black, the whole outer edge yellow; hind femora black	Tegulae pale ochreous, reddish on the inner margin; axillary sclerite fuscous, with paler yellowish brown centre	Scapes yellow with a black spot behind which does not reach the base or apex. Flagellum blackish brown above, fusco-ferruginous below, the first joint usually paler, or even yellow	Black	Chrome yellow	—
<i>aethiopicus</i> Cam.	Widest a little beyond the middle; apical excision angular, as wide as or wider than deep, the apical teeth acute; at least twice as long as wide; transversely rugose; colour blackish, the lateral margins and apex translucent reddish yellow	Black	Middle femora black, apical half of outer edge yellow; hind femora black, outer basal fourth yellow	Tegulae pale yellow; axillary sclerite black with pale yellow edge	Scapes black; flagellum blackish above, fusco-ferruginous below	Black	Darkcr than in the ♀, but paler than in the ♂ of the other four species; transverse bands on the third to sixth tergites, and often also on the second, entire; depressed apical margins as in the ♀	—
<i>lepturus</i> n.sp.	Widest at about the middle; apical excision subangular, wider than deep, the apical teeth small and acute; less than twice as long as wide; obliquely and finely striate; colour translucent reddish yellow, darkest at the base	Dark ferruginous	Middle femora ferruginous, whole of the outer edge yellow; hind femora ferruginous, a spot on the outside near the apex, yellow	Tegulae and axillary sclerite ochreous, the inner edge reddish ochreous	Scape and first joint of the flagellum pale yellow, the scape with a black mark behind which does not reach the base or apex; flagellum pale ferruginous	Black, the second and third with a pre-apical streak of yellow on each side	Chrome yellow	—



- Fig. 28. Epinotal process of *Oxybelus curviscutis*.  
 Fig. 29. Epinotal process of *Oxybelus rubrocaudatus*.  
 Fig. 30. Epinotal process of *Oxybelus aethiopicus*.  
 Fig. 31. Epinotal process of *Oxybelus lepturus*.  
 Fig. 32. Abdomen of *Oxybelus lingula*.  
 Fig. 33. Abdomen of *Oxybelus aethiopicus*.  
 Fig. 34. Abdomen of *Oxybelus curviscutis*, *rubrocaudatus* and *lepturus*.

*O. metopias* Kohl. *Ann. K.K.N.H. Mus. Wien*, ix, p. 285, ♀. 1894.

"♀. 6 mm. long. Vertex wide. The pronotal collar is compressed into a narrow, fine lamella, translucent at its edge, which is almost as high as the mesonotum. The mesopleurae are strongly and transversely striate, especially on the episternum and under the base of the wings. Sides of epinotum also sharply and transversely striate. Scutellum carinate in the middle. Metanotal squamae partly hyaline and partly yellowish white. The mucro is fairly wide, its white apex deeply excised. Face with whitish pubescence. The puncturation is easily visible in spite of the pubescence, and as it is not very dense in the neighbourhood of the ocelli, that part is slightly shining. The occiput is punctate and transversely striate. Mesonotum and scutellum punctured, the punctures not close together but distinctly larger than those of the vertex. ...The tergites are densely punctulate. The pygidial area is wide and triangular, almost equilateral. Metatarsus of the fore leg pale, somewhat transparent at the margins, the outer margin feebly sinuate in the middle, separating the spines of which there are seven or eight, into two groups.

Black. Pronotal tubercles, a narrow line on the collar, tegulae, two spots on the scutellum, the metanotum in part, preapical transverse bands on the first to fifth tergites, the whole of the apical segment and a large part of the ventral surface, ivory white; the greater part of the legs are also of this colour, but a part of the coxae, trochanters, the fore and middle femora, the whole of the hind femora, more or less extensive streaks on the inner side of the tibiae and the claws are brownish black. In the specimens examined the mesosternum is also spotted with white. Wings hyaline, veins pale reddish yellow. The flagellum is also reddish yellow excepting the basal joints."

Delagoa Bay (Monteiro).

*O. Newvilliei* Magretti. *Bull. Mus. National Hist. Nat. Paris*, iv, p. 188, ♂. 1908.

"♂. Black, with yellow white markings; mandibles excepting the extreme apex, scapes and first joint of the flagellum (the other joints testaceous), pronotal collar and tubercles, tegulae, a large round spot on each side of the scutellum, almost the whole of the epinotal process (its black base excepted),

interrupted bands on the first four tergites, a complete band on the fifth, the sixth and seventh entirely, and the legs (excepting the coxae, trochanters and basal half of the femora), yellowish ivory white. Head closely and finely punctured (the occiput striolate to a slight extent), the large ocelli arranged in a low and wide triangle; face wide above, narrowing towards the antennal sockets. Margin of the clypeus distinctly tridentate. Pronotum, excepting the smooth collar, mesonotum, mesopleurae and scutellum coarsely but not very densely punctured; metapleurae longitudinally striato-rugose and shining; scutellum with a median longitudinal and lamelliform carina, postscutellum with pellucid and rostriform squamae on each side, the epinotal process canaliculate, deeply excised at the apex, bifid, the rami widely divergent; dorsum of epinotum margined by carinulae, punctulate at the sides, the median area cordiform, deeply foveate below the process, shining. Abdomen closely and coarsely punctured; segments 2-6 with subrostriform lateral spines. Pygidial area triangular, rugose. Wings hyaline, veins flavo-testaceous. The anterior metatarsi obtusely excised at the base, with six thin and long spines on the outer margin, the upper margin of the middle and hind tibiae with shorter and thicker spines. 6 mm. long."

South of Lake Rudolph, E. Africa (M. de Rothschild). Type in the Mus. National d'Hist. Nat. Paris.

*O. rufipes* Taschenberg. *Zeitschr. f. Naturw.* LIII, p. 781, ♀, ♂. 1880.

"♂, ♀. 4-5 mm. long. Abyssinia. The black body is closely and deeply punctate, and on the head and thorax so covered with a short pale pubescence as to give those parts a metallic sheen. Antennae, mouth parts excepting the jaws which are black at least in the middle, prothorax and anterior legs bright red (*ziegelroth*), the prothorax in the ♀ with a whitish reflection due to the pubescence. The white squamae on the postscutellum are adjacent in the ♀, separated in the ♂, the epinotal process is long and lanceolate, emarginate at the apex in both sexes, but distinctly narrower in the ♂; as the sides are whitish and as there is a median darker and radiate streak, the process shows a certain resemblance to a small leaf. The distinctly black abdomen has the smooth apical margins of the tergites light yellowish red, more distinctly in the ♂ than in the ♀, and immediately in front of them lie fasciate lateral marks which in the ♀ remain separate on the first, second and fifth tergites and are fairly large on the first and second; on the third and fourth they are united to form narrow bands; in the ♂ they are separate and form broken bands on the first four tergites, but are lacking on the fifth. The pygidial area of the ♀ is yellowish red at the apex and covered with decumbent silvery hairs; in both sexes the sternites are smooth and shining, black, with more or less reddish transverse bands. The hyaline wings have reddish yellow veins and a darker stigma. The otherwise bright red middle and hind legs have the knees, tarsi, spines and inner side of the tibiae white."

The following new species have not been included in the keys to the species, having come to my notice whilst the preceding pages were in the press. Three of them belong to the group (B) with a gutter-shaped epinotal process, and the other to the group (A) with a mucronate process.

*O. Woosnami* n.sp. (fig. 34 A, a, b).

♀. 7.5 mm. long. Black. Mandibles pale ferruginous, darker at the apex. Scapes and first joint of the flagellum yellowish white, with a black macula above; flagellum reddish ochreous, paler below, the second to fifth joints

brownish above. Tarsi brownish ochreous, the basal joints darker. The following parts are yellowish white: a longitudinal streak on the upper side of the fore and middle tibiae, the apex and apical half of the under side of the fore and middle femora, a longitudinal streak on the upper side of the hind femora from the base to near the apex, the shoulders of the pronotal collar, the pronotal tubercles, a spot on the front of the tegulae, a small spot, variable in size and shape, on each side of the scutellum, and the middle of the posterior margin of the metanotum. The anterior tibiae are brownish ochreous below, somewhat darker outwardly; the middle and hind tibiae brown. Abdomen with a colour pattern very similar to that of *O. flaviventris*; on the first tergite the chrome yellow maculae are like those of that species; on the second tergite there is a large transverse macula on each side which leaves the extreme base, apex and middle third of the segment black. The maculae on the third tergite, narrowed inwardly, almost meet in the middle, while the fourth and fifth tergites are wholly yellow. Sixth segment and the extreme apical margin of the fifth, ferruginous; the pygidial area as long as wide at the base, covered with short golden hairs, the apex angularly emarginate. The second to fourth sternites have yellow spots at the sides. Clypeus, face and temples with greyish white pubescence, the vertex with erect, short and brownish yellow pubescence. Minute black hairs arise from the punctures on the tergites. Face and vertex closely and fairly strongly punctured, the punctures increasing in size towards the vertex. Mesonotum and mesopleurae evenly and fairly strongly punctured, the former with the spaces between the punctures shining, the latter dull. Scutellum shining, with a few large punctures, not distinctly carinate in the middle, the posterior fourth with the usual row of short carinae. Metanotum carinate lengthwise in the middle; posteriorly it is arcuately and abruptly declivous; its squamae are fuscous-translucent, traversed by three or four ridges, and end in a sharp point. Epinotal process mucronate; the mucro is long, thin and very acute at the apex, at the basal third it is abruptly dilated to form a nearly hemispherical cup. The median area of the epinotal dorsum, under and around the process, is slightly shining, sparsely and obliquely rugose; the lateral areas of the dorsum are dull, finely punctured and irregularly rugose. Sides of epinotum shining, transversely striate. Tergites fairly dull, the first two evenly, closely and not very strongly punctured, the punctures for the greater part not so large as those on the mesonotum. The puncturation of the third to fifth tergites is smaller and not so dense as on the first and second. Pygidial area closely punctured. The apical margins of the first five tergites are depressed and more closely and more finely punctured than the rest of the segments. Sternites shining, the second sparsely and very coarsely punctured. Median area of the clypeus with a transverse shining tubercle in the middle. The anterior margin of the clypeus is moderately convex, bluntly angular in the middle, and with two equally blunt projections on each side. Wings hyaline, the veins black.

Lake Ngami, October 2. 2 ♀♀ (R. B. Woosnam); Pretoria; 1 ♀ (Miss J. Brincker). Type (from Lake Ngami) in British Museum coll.

*O. harraricus* n.sp. (fig. 34 B, a, b, c).

♀. 6.5 mm. long. Black. Mandibles ferruginous, black at the apex. Flagellum ochreous brown, the first three or four joints fuscous above.



Fig. 34 a. *O. Woosnami*, ♀; a, posterior half of thorax; b, clypeus.



Anterior tarsi and tibiae, excepting the outer side of the tibiae, last two joints of the middle and hind tarsi, pale ferruginous or ochreous brown. Tegulae testaceous, axillary sclerite black. Apical segment of abdomen ferruginous. Pronotal tubercles, pronotal collar, a small spot on each side of the scutellum and the inner halves of the metanotal squamae, pale yellow. First tergite with a semi-elliptical yellow macula on each side near the apical margin; the second tergite with a narrower or almost linear macula, and the third with a much smaller spot of yellow on each side (fig. 34 B, a). Calcaria and spines of the legs reddish yellow. Wings hyaline, the veins brown. The pubescence on the face and

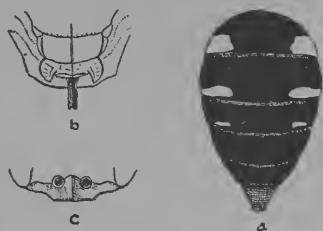


Fig. 34 b. *O. harraricus*, ♀; a, abdomen; b, posterior half of thorax; c, clypeus.

clypeus decumbent and silvery, on the vertex yellowish and erect, on the rest of the body and on the legs, whitish and sparse. Face and vertex deeply and closely punctured, the punctures not large. Mesonotum and scutellum with a similar and only slightly coarser puncturation. Mesopleurae about as strongly punctured as the mesonotum, slightly shining between the punctures. Sides of epinotum dull, closely, finely and transversely striato-rugose, feebly punctured between the rugae. Scutellum and metanotum carinate longitudinally in the middle; the posterior margin of the rather convex scutellum is not crenate. Metanotal squamae whitish and translucent on their outer halves, elongate triangular, the outer margins convex, the apex acute and not bifid. Epinotal process gutter-shaped, almost parallel-sided, curved upwards from the base, nearly four times longer than wide in the middle, the apex transversely truncate or feebly excised. The median area of the epinotal dorsum is shining, smooth except for one or two thin and oblique rugae; the lateral areas dull, closely reticulate-punctate. First tergite slightly shining, as strongly punctured as the mesonotum, but in its middle third not quite so closely; the second tergite dull, more closely and more finely punctured than the first, the remaining tergites dull and with a puncturation a little finer than on the second. Pygidial area closely punctured, sparsely covered with yellowish hairs, a little longer than wide at the base, the apex broadly truncate. Second sternite moderately shining, shallowly, finely and fairly closely punctured, the rest of the sternites shining. Clypeus carinate longitudinally in the middle, the anterior margin of its median area transverse and with subrectangular corners. The space between the eyes and the posterior ocelli is equal to the diameter of one of the ocelli.

♂. 5.5 mm. long. Apical segment of the abdomen black. The first four tergites have pre-apical, transverse, yellow maculae on the outer thirds of the segments. The collar of the pronotum is entirely yellow above, and the yellow spots on the scutellum are larger than in the ♀. Anterior tibiae pale yellow, their outer sides brown. Anterior and middle femora with a streak of pale yellow below, widened apically and not reaching the base. Middle tibiae along their whole length and the posterior tibiae at the base, yellow above. Flagellum entirely black. Otherwise coloured like the ♀. Anterior margin of the clypeus tridentate, the median tooth being formed by the apex of the carina, which is higher than in the ♀. The epinotal process is relatively longer and somewhat narrower than in the ♀. Seventh tergite quadrate. Otherwise like the ♀.

Harrar, Abyssinia. 2 ♀♀, 2 ♂♂. Types in British Museum coll.

*O. pilosus* n.sp. (fig. 34 C, a).

♀. 5-6.3 mm. long. Black. Mandibles ferruginous, blackish at the base and apex. Last six or seven joints of the flagellum, the tarsi and calcaria of the hind legs, reddish ochreous. Wings hyaline, the tegulae, axillary sclerite, costa and basal portion of the subcosta and medial vein pale ferruginous (pale burnt sienna), the rest of the veins brown. Anterior tibiae pale lemon-yellow above, ochreous on the inner, black on the outer side. The shoulders of the pronotal collar, the pronotal tubercles, a large round spot on the anterior corners of the scutellum and the whole of the metanotum between the squamae, pale lemon-yellow. First two tergites with a large pale lemon-yellow spot on each side, narrowed inwardly; the third and fourth tergites with transverse bands of the same colour which are widely interrupted in the middle. Pygidium reddish ochreous. Pubescence on the head long, silvery and decumbent on the clypeus, face and temples, yellowish and erect on the vertex. Mesonotum and scutellum with a rather dense covering of dark brown, erect hairs, more noticeable when the insect is viewed from the side, and much more abundant than in the majority of the members of this genus. Mesopleurae and the outer sides of the fore and middle femora with a sparse, long and whitish pilosity. Pubescence on the abdomen whitish, fairly distinct at the sides of the apical margins of the tergites and on the fifth tergite and pygidial area. Clypeus and sides of the lower half of the face moderately shining, finely and not very closely punctured. The upper part of the face and the vertex with a larger and closer puncturation and a trace of fine longitudinal rugae between the punctures; occiput punctured like the vertex and with the usual transverse rugosity. Mesonotum and scutellum fairly shining, strongly and closely punctured, longitudinally rugulose between the punctures. Anteriorly the mesonotum is impressed in the middle, and the posterior third of the scutellum is longitudinally striate and impunctate. Mesopleurae shining, sparsely and coarsely punctured; metapleurae and sides of the epinotum fairly dull, transversely striate. Metanotum smooth and shining, with a median longitudinal carina like the scutellum; the metanotal squamae narrow, rostrate, excavated and opaque, the apex acute and not bifid. Epinotal process gutter-shaped, resembling that of *O. Peringueyi* but much narrower; a little in front of the bilobed apex it has a curved transverse ridge. Unlike *Peringueyi*, this species has the median and lateral areas of the epinotal dorsum dull, very finely and closely reticulate-punctate and also sparsely, obliquely rugose. The abdomen is shining, and more finely and less closely punctured than in *Peringueyi*. Pygidial area triangular, a little longer than wide at the base, the apex rounded. Median area of the clypeus with a sub-conical tubercle in the basal half which is continued as a carina to the anterior margin. The anterior lateral angles of the median area are acute.

♂. 4.5-6 mm. long. Flagellum black, the eighth to eleventh joints more or less ferruginous. The head and thorax have a slightly aeneous tinge, and all the yellow markings, as in *Peringueyi* ♂, are of a deeper shade of yellow (chrome yellow) than in the ♀. Tarsi ochreous; fore and middle tibiae yellow above, the former ochreous red below, the middle tibiae black below. Fore and middle femora yellow at the apex and on the outer apical third. Posterior tibiae yellow, suffused with black below, and with a black spot on the outer side at the apex. First five tergites with yellow maculae on each side, the seventh tergite fusco-ferruginous. As in *Peringueyi* the sculpture in this sex is much closer and stronger than in the ♀, so that the mesonotum and tergites

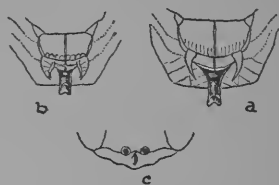


Fig. 34 c. a, *O. pilosus* ♀, posterior half of thorax; b, *O. pictus* ♀, posterior half of thorax; c, *O. pictus*, clypeus.

are dull, both the mesonotum and scutellum being distinctly reticulate-punctate. Erect pilosity on the vertex and mesonotum yellowish, the pubescence on the face and clypeus golden. Clypeus with three teeth on the anterior margin. Otherwise like the ♀.

Harrar, Abyssinia. 2 ♀♀, 14 ♂♂ (R. E. Turner). Types in British Museum coll.

*O. pictus* n.sp. (fig. 34 C, b, c).

♀. 5.7 mm. long. Black. Mandibles ferruginous, piceous at the apex. Scapes and flagellum ochreous, somewhat paler below. Pronotal collar, pronotal tubercles, a small spot on each anterior corner of the scutellum, the inner margins of the otherwise hyaline metanotal squamae, a large semi-elliptical transverse macula on each side of the first tergite, and a very narrow and short streak on each side of the second tergite, pale lemon yellow. Second sternite, excepting the base and the sides, and a transverse raised band on the fourth sternite, pale lemon yellow, with a slight tinge of green. Sixth abdominal segment ferruginous. Tegulae stramineous, blackish inwardly, the axillary sclerite black, with a pale whitish yellow border. Anterior tarsi and tibiae reddish ochreous, the apical joint of the tarsi pale ochreous, the apex of the anterior femora and a streak on the upper side of the anterior tibiae, pale lemon yellow. Anterior femora fusco-ferruginous below, black elsewhere. Middle and hind femora fusco-ferruginous, paler apically, the middle pair with a spot of pale yellow below near the apex. Middle and hind tibiae ferruginous, paler apically, their bases yellow above. Middle and hind tarsi reddish ochreous, the apical joints pale ochreous. Wings hyaline, the veins pale brown. Clypeus, face and temples with silvery pubescence; on the rest of the body the pubescence is grey, short and scanty. Head finely and closely punctured. Mesonotum and scutellum moderately shining, evenly and not closely punctured, the punctures a little larger than those on the vertex. Mesopleurae shining, sparsely, coarsely and irregularly punctured. Scutellum and metanotum carinate longitudinally in the middle, the metanotum also with a few rugae between the squamae. Metanotal squamae rostrate, the apices not entire but very shortly cleft. Declivity and sides of the epinotum slightly shining, transversely and sparsely rugulose; the lateral areas of the dorsum dull and closely punctulate, the median area shining, with a few fine rugae. Epinotal process gutter-shaped, almost parallel-sided or only slightly dilated towards the apex, which is shallowly and angularly excised. The process is curved from the base to the middle, about twice as long as wide, and has a transverse ridge a little beyond the middle. Tergites moderately shining; the first is more finely punctured in the middle, and more coarsely so at the sides than the mesonotum. The puncturation on the second to fifth tergites is clearly finer and closer than on the mesonotum, the punctures increasing in size towards the apical margins of the segments, but not decreasing very much from segment to segment, so that the punctures on the fourth and fifth are not much smaller than on the second and third. Pygidial area as coarsely punctured as the mesonotum, and a little more closely, triangular, longer than wide at the base, the apex narrowly and feebly emarginate. Sternites shining, the second coarsely and sparsely punctured in the middle, finely and closely so at the sides. Face wide, the interocular distance across the clypeus being only slightly greater than across the vertex. Compared with the majority of our species, the clypeus is very short; the anterior margin of the median area is convex in the middle and its lateral angles are rounded; the median carina does not reach the anterior margin, but at the base it is high, forming a blunt tubercle.

Sawmills, S. Rhod. 1 ♀, December (R. H. R. Stevenson). Type in Stevenson coll.

## APPENDIX II

Further additions to the groups already dealt with, together with some corrections, are brought forward in this appendix.

## LARRA Group

*Eparmatostethus* Kohl. *Verh. K.K. Zool. Bot. Ges. Wien*, p. 176. 1907.

This genus, erected for a species from Madagascar, cannot be maintained and should be regarded as a synonym of *Gastrosericus*. The characters which its author considered distinctive are the strong projections of the lateral sclerites of the clypeus and the lateral projections from the sides of the prosterna. But these structures are developed to a varying degree in several species of *Gastrosericus*, such as *bidentatus* Arn., *lamellatus* Turner and *Sualei* Turner. Moreover, the fusion of the recurrent veins before their junction with the cubitus is to be found not only in *E. madecassus* Kohl but also in *G. divergens* Brauns and *G. simplex* Arn.

*Prosopigastra Mocsaryi* Brauns.

♀. 6 mm. long (hitherto undescribed). Colour of the head and thorax as in the ♂, but the tibiae and tarsi are darker; the two basal segments of the abdomen pale ferruginous, the remaining segments piceous with paler apical margins. Clypeus, face, vertex, mesonotum, scutellum and metanotum shining, sparsely and strongly punctured, more strongly than in the ♂. Pronotum very closely and finely punctured, the rest of the thorax sculptured as in the ♂, but the rugae on the dorsum of the epinotum are finer and closer. Abdomen closely and finely punctured, less closely below than above, and not so closely as in the ♂; the punctures only a little smaller than the spaces between them, clearly visible with a magnification of 16 diameters. Mesopleurae unarmed. Interocular distance on the vertex about equal to the length of the first three joints of the flagellum. Anterior margin of the median area of the clypeus, which is much wider than in the ♂, convex and depressed. Pilosity on the thorax yellowish. First tergite without the dense pubescence which is present in the ♂. Tibiae and tarsi with blackish spines. Pygidial area broadly triangular, shining, sparsely and sharply punctured. Otherwise like the ♂.

Willowmore, type in coll. Brauns.

## Genus TACHYTES.

In the key to this genus, *T. bulawayoensis* Bischoff has been omitted. It works down to paragraph 81, and may be distinguished from *inexorabilis* Turner by the narrower vertex, which is not quite equal to the length of the first two joints of flagellum, and by the longer inner calcar of the hind tibia, which is distinctly longer than the metatarsus. The galea is as long as the scape.

*T. Distanti* Turner. This species included in the keys, was omitted from the text. The original description is as follows:

“♀. Nigra, argenteo-pilosa; tarsi ferrugineis, articulo basali supra nigro; capite, thorace, segmento medio albedo-pilosis, mesonoto scutelloque pallide fulvo-griseo-pilosis; segmentis dorsalibus dense argenteo-pubescentibus, fasciis apicalibus distinctis; area pygidiali argenteo-pilosa; segmentis ventralibus apice anguste brunneis; alis subhyalinis, pallidissime flavidulis; venis ferrugineis. Long 14 mm.

Clypeus broadly rounded at the apex, the anterior margin shallowly depressed and very shallowly emarginate in the middle. Eyes separated on the vertex by a distance slightly less than the combined length of the two basal joints of the flagellum. Front and clypeus with shining silver pubescence, with long whitish hairs intermingled; pleurae and median segment clothed with long whitish hairs, the dorsal surface of the thorax clothed with short erect greyish-fulvous hairs. Dorsal segments densely covered with silver pubescence; pygidial area triangular, almost pointed at the apex, clothed with silver pubescence slightly tinged with gold. Second sternite subopaque, finely and closely punctured. Basal joint of the fore tarsus with five long pale spines. Radial cell pointed at the apex, the appendicular cell very narrow; third cubital cell extending on the cubitus beyond the apex of the radial cell, nearly three-quarters of the length of the second cell on the cubitus. First abscissa of the radius a little longer than the third, second less than two-thirds of the length of the third, the distance between the recurrent nervures on the cubitus slightly greater than the second abscissa of the radius.

*Hab.* Pretoria (Distant).

Very nearly related to *T. argenteovestita* Cam., and *T. bulawayoensis* Bisch., but differs from both in having only five spines on the basal joint of the fore tarsus, instead of six as in those species; it also differs from *bulawayoensis* in the colour of the pubescence on the pygidial area; and from *argenteovestita* in the colour of the tarsi and in details of neururation."

*T. opposita* Turner. The galea in this species is shorter than the scape, as correctly stated in the key, and not longer, as it is said to be in the description on p. 208 (*Annals Trans. Mus.* ix, pt. 4).

*T. rhodesiana* Bischoff. This species usually has five spines on the anterior metatarsus, but I have seen several specimens, which cannot be referred to any other species, in which there are six. The number of spines on the metatarsus is certainly not a trustworthy character in this genus.

*T. nigroannulatus* Bischoff. In part 2 of this work, p. 152 (*Annals Trans. Mus.* ix, pt. 3), this name was synonymised with *Tachysphex syriacus* Kohl. Dr Bischoff has informed me that the type of his species is certainly not a *Tachysphex*, and that *Tachytes glabriuscula* Arn., agrees with his description of *nigroannulatus*. By some unfortunate mischance the specimen returned to me by Dr Bischoff in 1913, bearing a number corresponding to a number in a list of names, was without doubt *T. syriacus*, but on comparing the type of *Tachytes glabriuscula* with the diagnosis of *nigroannulatus* it is evident that the latter is a valid species, to which *glabriuscula* must be sunk in synonymy.

*Notogonidea montivaga* Cam. (Sjöstedt, *Kilimandjaro-Meru Exped.* 8, p. 286, ♂, 1910). The description of this species, which is unknown to me in nature, was omitted. It is as follows:

"Black, covered with a silvery pile, which is very dense on the lower part of the front, face, clypeus and base of mandibles, the latter reddish in the middle; the metanotum closely longitudinally striated, the striae more or less twisted, the apical slope transversely striated; wings hyaline, the apex slightly clouded, the nervures black; the radial cellule wide, the apical abscissa straight, not oblique, the part between it and the third transverse cubital nervure oblique, the second and third abscissae of the radius equal in length; the second recurrent nervure is received in the middle of the cellule; it is bluntly

angled in the middle. The third antennal joint is a little shorter than the fourth. Eyes at the top separated by a little more than the length of the second and third antennal joints united. Pygidium closely punctured, covered with silvery pile, the apex almost transverse; apex of hypopygium rounded.

♂, length 6 mm. The sternal process has the sides stoutly keeled and furrowed inside the keel; the central keel is only stout in the middle; there is a longish triangular incision on the apex. Metapleurae weakly obliquely striated. Tibial and tarsal spines black, intermixed with fulvous ones. The long spur of the hind tibiae is two-thirds of the length of the metatarsus."

Kilimandjaro: Kibonoto, April.

### PISON Group

*Pison iridipennis* Cam. An examination of the type in the collection of the Albany Museum shows that Cameron's species should be synonymised with the race *karrooensis* Arn. of *allonymum* Schultz, and not with the species. Cameron's name is in any case invalid, having been preoccupied in the genus by F. Smith.

### ASTATA Group

*Diploplectron africanum* Arn. Numerous examples of this insect have been taken by Capt. Stevenson on various occasions in company with *Astata flavo-undata* Brauns. The suspicion that they were the two sexes of one species has been fully confirmed by the capture of a pair in copula. It follows, therefore, that *D. africanum* sinks as a synonym of *A. flavo-undata* Brauns.

### PEMPHREDON Group

*Ammoplanus capensis* Brauns. This species is synonymous with *A. mandibularis* Cameron (*Entomologist*, xxxvi, p. 178, 1903).

*Ammoplanus consobrinus* n.sp. (figs. 35, 35 a and b).

♀. 2.3 mm. long. Black. Mandibles, labrum, scapes, margins of the pronotal tubercles, tegulae and legs, pale straw yellow. Posterior coxae and basal two-thirds of the posterior femora pale fuscous. Wings hyaline, veins almost colourless except the costa, subcosta and radius which are brown. The stigma is pale straw yellow, translucent, with the margin brownish. Flagellum brown above, brownish yellow below. The whole body shining and glabrous. Face microscopically rugulose (this sculpture is barely visible with a magnification of less than 35 diameters). The vertex and temples smooth, with a very few minute punctures, distantly spaced. Neck of pronotum slightly dull, finely and transversely rugulose. Mesonotum with a very shallow, transverse and fairly close aciculation, and a few very shallow punctures. Scutellum, metanotum and mesopleurae smooth and impunctate. Dorsum of epinotum with a very open rugose reticulation; the sides with about four or five oblique and sharp rugae, the declivity slightly dull, very finely transversely rugose. Abdomen with a microscopic transverse rugulosity. Head in front one-third wider than high, much wider than in *A. rhodesianus*, and viewed from the side, not so high above the upper margin of

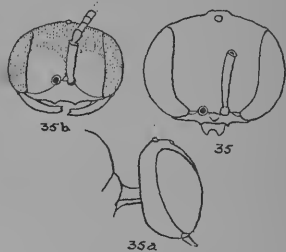


Fig. 35. *Ammoplanus consobrinus*, ♀, head; a, the same, lateral view, b, head of ♂ (undotted parts pale yellow).

the eyes as in that species. Clypeus not linear as in *A. mandibularis* but almost as well developed as in *rhodesianus*; the anterior margin in the middle is feebly concave, with a small angle at each side, the base between the antennal sockets slightly swollen. The labrum projects forwards and is semicircularly excised. First joint of the flagellum longer than wide, as long as the two following united, the second and third subequal, the apical joint slightly enlarged and flattened. Posterior ocelli a trifle nearer the anterior ocellus than they are to each other, nearly twice as far from the eyes as from each other. Pronotal collar short, impressed longitudinally in the middle. The mesonotum is distinctly more convex in front than in *rhodesianus*, and a little more than twice as long as the scutellum, whereas in *rhodesianus* it is barely twice as long. The sculpture of the epinotal dorsum, especially the transverse rugae, is stronger than in the other species. Venation like that of *rhodesianus*.

♂. 2 mm. long. Mandibles, scapes, clypeus and lower half or more of the face, smooth, shining and lemon yellow. The yellow on the face is more extensive than in *rhodesianus* ♂, the maculae almost meeting in the middle, their upper margins nearly semicircular. Scapes wide, the first joint of the flagellum nearly as long as the two following united, the second a trifle longer than the third and longer than wide. Clypeus more developed than in the ♀, longer in the middle than at the sides, the emargination in front deeper. Otherwise like the ♀ in colour and sculpture.

Helenvale, S.R., December (G. Arnold); 1 ♀, 2 ♂♂. Nesting in a decayed wooden post. Types in R.M. coll.

*Stigmus rugosifrons* Arn., race *johannis* n.r.

♀. 5.7 mm. long. Larger than the type of the species and differing from it as follows: Anterior and middle tibiae and tarsi darker or reddish brown. The petiole paler, reddish brown. Mandibles black at the base, ivory white in the middle, the apex fuscous. Wings with a fuscous cloud across the middle, and another which extends from the stigma across and beyond the second cubital cell, covering the base of the radial and upper corner of the first cubital cells. Face dull, very finely reticulate-punctate, at the sides somewhat obliquely striolate. Median area of the clypeus more deeply excised on the anterior margin. Vertex and occiput shining, almost smooth, the transverse striae being almost obliterated. Flagellum relatively more slender than in the type of the species, the joints longer; the first is distinctly shorter than the second or third, the second to fourth joints are four times longer than wide at the apex, whereas in the type of the species they are only three times as long. Petiole a little more slender.

♂. ca. 4.5 mm. long. Colour, sculpture and wings as in the ♀. First joint of the flagellum shorter than the second, the third and following joints not dilated near the apex as in the type of the species.

Port St Johns, Pondoland, September (R. E. Turner). 2 ♀♀, 1 ♂. Types in the British Museum.

*Spilomena Turneri* n.sp. (figs. 36 and 36 a).

♀. 2.5 mm. long. Black. Anterior tibiae and tarsi brownish ochreous, the middle and hind tarsi pale brown, with the apical joint darker. Wings hyaline, veins brown, the stigma almost black. Head fairly shining, almost smooth, but with a microscopic alutaceous sculpture which is barely appreciable with a magnification of even 60 diameters. Median area of the clypeus convex, longitudinally and closely striate, carinate lengthwise in the middle, the carina projecting backwards as far as the middle of the face, the anterior margin convex. Head a little longer than wide, the eyes slightly

convergent above. Scapes hardly reaching back as far as the middle of the face. All the joints of the flagellum, excepting the first and last, at least as wide as long, mostly wider. Posterior ocelli nearly twice as far from the eyes as they are from each other, a little farther from each other than they are from the anterior ocellus. Pronotal collar longer than in *Merceti* or *Stevensoni*, its anterior face and neck distinctly reticulate-punctate, the dorsal face obliquely striolate, shining, longer at the sides than in the middle, at the latter point a little longer than the first joint of the flagellum, narrowed slightly anteriorly, the anterior margin raised, and with a low transverse torus in the middle.

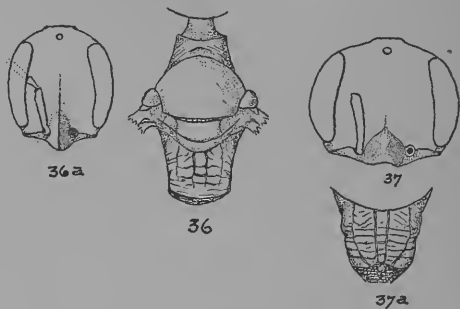


Fig. 36. *Spilomena Turneri*, ♀, thorax; a, head.  
Fig. 37. *Spilomena robusta*, ♀, head; a, epinotum.

Mesothorax and sides of epinotum smooth and shining, the mesonotum half as wide again as long, and two-and-a-half times longer than the scutellum. Dorsum of epinotum fairly dull, with widely separated transverse rugae, and a pair of strong longitudinal rugae on each side of the middle which do not reach the apical margin; the space between the rugae superficially reticulate. The dorsum of the epinotum is nearly as long as the mesonotum. Declivity dull, closely and transversely rugulose. Abdomen smooth and shining, excepting the apical segment which is dull and punctulate. Second cubital cell twice as long as high; the first abscissa of the radius a little less than one-third the length of the second. The recurrent vein enters the first cubital cell at a distance from its apex which is equal to the first abscissa of the radius.

Ceres, C.P., February (R. E. Turner), 1 ♀. Type in the British Museum.

*Spilomena robusta* n.sp. (figs. 37 and 37 a).

♀. 2.7 mm. long. Black. Scapes and first joint of the flagellum brownish ochreous. Anterior and middle tibiae and tarsi and the hind tarsi ochreous, the anterior femora of the same colour but with a slight infuscation on the upper side, the posterior fourth of the hind tibiae pale ochreous. Mandibles fusco-ferruginous, the tegulae dark brown. Head shining, microscopically alutaceous, with a very fine and sparse puncturation on the face and vertex. Pro- and mesothorax shining, the pronotum striate at the sides, the mesonotum, scutellum and disc of metanotum microscopically alutaceous like the head. Mesopleurae transversely striolate near the base, sides of epinotum finely and obliquely striate and dull; the declivity dull, transversely rugulose and reticulate. The dorsum of the epinotum has a sculpture resembling that of *S. Turneri*, but the two median longitudinal rugae are sharper and reach the brow of the declivity, the transverse rugae emitted from them are more numerous and extend outwards as far as a sharply defined lateral carina which is only barely indicated in *Turneri*; the spaces between the rugae are reticulate-punctate and dull. The dorsum is also less rectangular at the apical margin than in *Turneri*. Abdomen smooth and shining, the apical tergite dull, compressed and covered with a greyish pubescence.

Head, excluding the closed mandibles, one-fourth wider than long, but not so wide as in *S. Stevensoni* in which it is nearly one-third wider than long. Median area of the clypeus very convex but not carinate longitudinally,



the anterior margin feebly concave. First joint of the flagellum nearly as long as the two following united; the second joint is a trifle longer than wide at the apex, the third and fourth as long as wide. The posterior ocelli are one-and-a-half times as far from the eyes as they are from each other. Pronotal collar shorter than in *Turneri* but much longer than in *Stevensoni*, in which it is almost linear; it is less narrowed in front than in *Turneri* and its length in the middle is about half the length of the first joint of the flagellum. Second cubital cell about one-third longer than high; first abscissa of the radius one-fourth the length of the second abscissa; the recurrent vein is interstitial with the first transverse cubital vein.

Mossel Bay, C.P., April (R. E. Turner), 2 ♀♀. Type in the British Museum.

*Psenulus Turneri* n.sp.

♀. 6.5 mm. long. Black; antennae, anterior pair of legs excluding the coxae and last two segments of the abdomen, ferruginous. Middle and hind legs, excluding the coxae, and posterior half of the tegulae, fusco-ferruginous. Clypeus and face below the transverse carina with fairly long and dense silvery pubescence; the rest of the head, mesopleurae, metanotum and sides of the epinotum with shorter and scantier pubescence of the same colour. Abdomen with a very sparse whitish pubescence. Clypeus and face with a slightly greasy lustre, finely rugulose-punctulate, the anterior margin of the clypeus produced in the middle into two short teeth, close together. Face above the transverse carina moderately shining, closely and evenly reticulate-striate, the striae diverging obliquely outwards and separated by single punctures. On the vertex the striae are somewhat effaced, but on the temples the sculpture is similar to that of the face and stronger, the striae more or less vertical. The whole thorax fairly shining. Anterior face of the pronotal collar transversely rugulose, the dorsal face very finely punctured, its anterior margin raised, the shoulders feebly rounded, shorter in the middle than at the sides. Mesonotum sparsely and unevenly punctured, with traces of transverse striae. Scutellum punctured like the mesonotum, the metanotum more finely and less closely so. Mesopleurae sharply and not closely punctured, with faint striae near the posterior margin. Dorsum of epinotum with a well defined basal area, strongly clathrate or carinate longitudinally at the sides and transversely in the middle; the rest of the epinotal dorsum coarsely reticulate-rugose; the sides of the epinotum obliquely striate, the striae fading out in front. Abdomen smooth and shining. Petiole distinctly curved near the base, about half as long again as the first tergite, when seen from the side. Antennae inserted a little below the middle of the face; at about half-way between them and the hind margin of the clypeus there is a transverse carina which does not reach the inner margins of the eyes. This carina is connected with a median longitudinal carina which extends to the antennal sockets and is continued thence as a thin raised line as far as the anterior ocellus. Posterior ocelli a little nearer to the eyes than they are to each other, and nearly twice as far from each other as they are from the anterior ocellus. Flagellum stout, the first joint about as wide at the apex as long, and a little shorter than the second. The apical joint is not quite as long as the two preceding joints united. Mesonotum a little more than twice as long as the scutellum, the latter twice as long as the metanotum. Wings pale fusco-hyaline, the veins and stigma blackish. First and second abscissae of the radius together about equal to the third; the second cubital cell with a short stalk on the radius.

Mossel Bay, C.P., November (R. E. Turner), 1 ♀. Type in the British Museum.

*Stigmus gueinzii* Turner. The statement in the original description that the second joint of the flagellum is more than half as long again as the first is incorrect. By measurement of the type it is evident that it is barely one-quarter longer.

### THYREOPUS Group

*T. (Encopognathus) egregius* Arn. This name sinks as a synonym of *E. Brownei* Turner, the type of which I have now seen. Turner omitted any mention in his description of the lamellae surrounding the margins of the metanotum.

*T. (Entomognathus) bidentatus* n.sp. (figs. 38 and 38 a).

♀. 4.5 mm. long. Black. Anterior tibiae fuscous ochreous on the inner side, the apical joint of the fore tarsi yellowish. Tegulae brown, wings pale

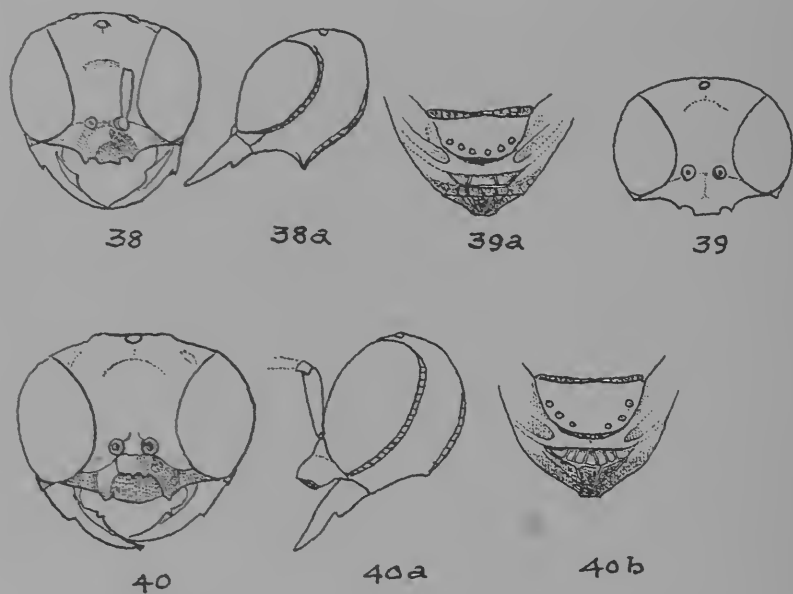


Fig. 38, 38 a. *Entomognathus bidentatus*, ♀, head.

Fig. 39. *Entomognathus ignavus*, ♀, head; a, posterior half of thorax.

Fig. 40, 40 a. *Entomognathus subnasutus*, ♀, head; b, posterior half of thorax.

fusco-hyaline, the veins dark brown. Clypeus and sides of the lower half of the face with silvery pubescence. The rest of the head and the thorax with a very scanty, short and grey pubescence, the tergites with similar but less scanty pubescence. Lateral sclerites of the clypeus and the sides of the lower half of the face sparsely punctured and dull, the rest of the head and the thorax shining. Vertex very sparsely and fairly finely punctured, the temples more finely and less closely. Mesonotum and scutellum punctured like the vertex; the mesonotum has a round pit-like puncture on each side of the middle just behind the anterior margin, and an oblong one on each side near the lateral margins and opposite the tegulae. Meso- and metapleurae with a few fine and widely separated punctures. Median area of the epinotum

with short longitudinal carinae at the base, and oblique ones at the sides, the surface between them shining. The declivity and lateral areas of the very short dorsum are dull and closely reticulate-rugose, the sides of the epinotum shining and nearly smooth in front, reticulate-rugose behind. Abdomen finely, evenly and fairly sparsely punctured, the puncturation stronger on the first and second tergites than on the rest, most of the punctures separated by spaces about three or four times the diameter of a puncture.

Pygidial area triangular, longer than wide at the base, coarsely and closely punctured, the apex narrowly rounded, the apical fourth fusco-ferruginous. Median area of the clypeus raised and subtubercular at the base, the anterior portion produced, subquadrate, the anterior margin straight and rectangular at the corners. On each side of the anterior margin of the median area there is a strong triangular tooth. Eyes widely divergent above, the least distance between them is at a point a little behind the antennal sockets, where it is equal to one and two-thirds the length of the scape. Posterior ocelli separated from the eyes by two and a half times the diameter of one ocellus. The posterior margin of the eye is bordered by a transversely crenate sulcus; the temples are separated from the mentum by a similar sulcus, and beyond the middle are produced into a stout downwardly directed tooth. Facial concavity very shallow, the brow of the depression not clearly defined. Lateral foveae on the vertex semicircular and deeply impressed. Pronotal collar short, not much longer at the sides than in the middle, transversely grooved, the shoulders subrectangular.

Aliwal North, C.P., December (R. E. Turner), 1 ♀. Type in the British Museum.

Allied to *E. Stevensoni* Arn., but larger and easily distinguished from that species by the tooth on the temples and the shape of the clypeus. It also resembles *E. apiformis* Arn., but the latter has much stronger puncturation, a deeply excavated facial concavity, and no tooth on the temples.

*T. (Entomognathus) ignavus* n.sp. (figs. 39 and 39 a).

♀. 5 mm. long. Black. The apex and front of the scapes, a transverse spot on the front of the tegulae, tibiae, metatarsi and apices of the femora, lemon yellow. The second to fourth tarsal joints pale ochreous, the apical one brown. All the tibiae with a blackish longitudinal streak below. Apical third of the pygidium reddish yellow. Wings hyaline, faintly tinged with brown, the veins brown. Clypeus and sides of the face with silvery pubescence; on the rest of the head and on the thorax the pubescence is sparse and grey, and on the eyes it is distinctly long. Tergites with a brownish grey pubescence on the apical margins, pygidial area covered with pale golden setae. Apical half of the median area of the clypeus smooth and shining, the rest of the clypeus and the sides of the face dull and closely punctured. Facial concavity smooth and shining. From the brow of the concavity to the back of the vertex the head is sparsely pitted; these pit-like punctures are very shallow and small in front of the posterior ocelli, but large and deep behind them. A single row of these punctures extends half-way down the temples. The occipital slope is smooth and shining, the posterior margin of the occiput reflexed and forming a crenate groove which is continued down the lower margin of the temples. A similar groove borders the posterior margin of the eyes. Mesonotum, scutellum and mesopleurae shining, with large and widely spaced pits like those on the back of the head, intermixed with a few small punctures. Metanotum dull in the middle. Sides of epinotum dull, rugulose, with a few short rugae near the margin of the declivity. Dorsum of epinotum with a short, shining, crescentic basal area, defined by sharp upstanding rugae,

divided into three sectors by two oblique carinae. The lateral areas of the epinotal dorsum and the declivity are irregularly and coarsely rugose and somewhat dull. First and second tergites slightly glossy, closely and fairly strongly punctured, the third to fifth finely and less closely. The first two tergites have a few irregularly distributed pits intermixed with the ordinary punctures; they are shallow, and like those on the head and thorax, have in their centres a small puncture. Pygidial area triangular, a little longer than wide at the base, closely covered with large elongate punctures, the apex narrowly rounded. Sternites shining, the second with a sparse, large and shallow puncturation, the apical margins of the third to fifth and apical half of the sixth finely and closely punctured. Median area of the clypeus slightly produced, feebly carinate longitudinally in its basal half, the anterior margin straight in the middle, and armed on each side with a short tooth. The least distance between the eyes is below the middle of the face and is equal to about two-thirds the length of the face (measured from the anterior ocellus to the posterior margin of the clypeus). Posterior ocelli a little nearer to the eyes than they are to each other, separated from the eyes by two and a half times their own diameter. Second joint of the flagellum as long as the third, the apical joint almost as long as the two preceding joints united. Lateral foveae of the vertex large, subelliptical, distinctly defined. Abdomen oblong-ovate, twice as long as it is wide across the second segment, where it is widest.

♂. 4.5 mm. long. Anterior and middle tibiae yellowish red, the former more or less infuscated above, the latter below.

Anterior metatarsus flattened and dilated; the apex of the anterior tibiae also somewhat dilated. Sixth to eighth joints of the flagellum swollen below. Sides of epinotum more strongly rugose than in the ♀. Sixth tergite as strongly punctured as the first. Pygidial area trapezoidal. Otherwise like the ♀.

Bulawayo, January (R. H. R. Stevenson), 2 ♂♂, 1 ♀. Types in coll. Stevenson.

*T. (Entomognathus) subnasutus* n.sp. (figs. 40, 40 a and b).

♀. 6 mm. long. Black. Basal half of the mandibles yellow, the apical half ferruginous. Front of the scapes, tibiae and tarsi, and apical half or more of the femora, pale chrome yellow. The apical joints of the tarsi brownish yellow. Tegulae pale ochreous. Apical segment of the abdomen ferruginous. Wings pale fusco-hyaline, the veins blackish, the costa fusco-ferruginous near the base. Sides of the face and the clypeus with silvery pubescence. Abdomen and mesopleurae with fairly abundant, thin and greyish pubescence, the mesonotum with a short brownish pubescence which is barely visible unless viewed from the side. Facial concavity smooth and shining, its upper half fairly deep. Face above the concavity, vertex and upper half of the temples covered with large pits, deeper on the vertex and occiput than in front of the ocelli, intermixed with small punctures, the spaces between them slightly shining. Lower part of the temples closely shallowly punctured and dull. The crenate grooves margining the back of the eyes and temples are distinct. Pronotum fairly dull, shallowly rugulose and punctate, the anterior face of the collar vertical, the dorsal face transversely grooved, a little longer in the middle than at the rounded shoulders. Mesonotum moderately shining, with a large ovoid pit on each side of the middle line a little behind the anterior margin, with which they are connected by a row of punctures; there is also a shallow pit near the lateral margins opposite the tegulae. Otherwise the sculpture of the mesonotum consists of large and small punctures intermixed and widely separated. The scutellum has a similar puncturation and is shining; a little in front of its posterior margin there is on each side a row of

three deep and round pits. Disc of the metanotum shining, very sparsely and finely punctured. Mesopleurae sparsely pitted, with a few fine punctures intermixed, slightly shining. Sides of epinotum transversely striolate, the declivity dull and finely reticulate-punctate at the sides, reticulate-rugose in the middle. Dorsum of the epinotum short, with a median basal area sharply defined by strong ridges and traversed by six oblique carinae. Tergites 1-5 closely, evenly and deeply punctured, the punctures not large, those on the fourth and fifth not much smaller than on the preceding segments. Pygidial area triangular, a little longer than wide at the base, the apex acute, closely and strongly punctured. Second sternite closely pitted and transversely rugose, fairly dull, the lateral foveae dull and coriaceous, the remaining sternites shining and microscopically rugulose.

The middle portion of the median area of the clypeus is raised into a nasiform protuberance which, seen from the side, appears vertically truncate in front; the junction of its oblique upper plane and the vertical plane forms a bisinuate or feebly tridentate line. The least distance between the eyes is a little behind the antennal sockets and is equal to the length of the scape plus the first two joints of the flagellum. The second and third joints of the latter are subequal. The posterior ocelli are separated from the eyes by two and a half, and from each other by three times their own diameter. Lateral foveae of the vertex pyriform, distinct and twice as long as one of the ocelli. Mesonotum two and a third times longer than the scutellum. Abdomen ovate, nearly twice as long as wide in the middle. Accessory cell of the forewing distinctly defined.

Sawmills, S.R., February (R. H. R. Stevenson), 1 ♀. Type in coll. Stevenson.

*T. (Entomognathus) apiformis* Arn.

♂ (hitherto undescribed). 4.7 mm. long. Anterior tibiae yellow above, the middle and hind tibiae with a narrow streak of the same colour on the upper side. Anterior and middle femora pale ferruginous above. Anterior metatarsi dilated outwardly. The flagellum has the fourth and fifth joints arcuately emarginate below; the first joint is as long as the second and third united, the second to eleventh joints wider than long. Pygidial area sub-quadrate. Otherwise like the ♀.

Vumbu Mts., Umtali, S.R., February (G. Arnold). Type in R.M. coll.

*T. (Dasyproctus) bipunctatus* Lep., race *funereus* Arn.

♀ (hitherto undescribed). 10 mm. long. Fourth and fifth tergites with a narrow transverse band of pale yellow on each side at about the middle of the segment, otherwise coloured like the ♂. The puncturation differs from that of the type of the species in the same way as in the ♂. The pubescence on the clypeus is golden, and the node of the petiole is thicker than in the type of the species. Otherwise like the ♂.

Vumbu Mts., Umtali, S.R., February. Type in R.M. coll.

*T. (Dasyproctus) angustifrons* n.sp. (fig. 41).

♂. 10.3 mm. long. Black. Scapes excepting a black streak behind, basal two-thirds of the mandibles, pronotal tubercles, an elongate mark on each side of the pronotal collar not reaching the shoulders, a small spot on the anterior angles of the scutellum, the outer face of the anterior and middle tibiae, the apices of the anterior femora and a longitudinal streak, widened apically, on the outer face of the posterior femora, pale chrome yellow. Apical third of the mandibles fusco-ferruginous. The node of the petiole and

the second to sixth tergites have small pale yellow oblong spots at the sides, those of the fourth to sixth not visible when the insect is viewed direct from above. Tarsi of fore and middle legs ochreous, the basal joint chrome yellow; hind tarsi fuscous. Wings hyaline, the veins brown. Pubescence like that of *bipunctatus*, but on the clypeus it is golden silvery. The fine black pubescence on the vertex and mesonotum is longer than in *bipunctatus* and on the vertex somewhat more abundant, the fine punctures from which the pubescence arises are also more distinct. The extreme posterior margin of the mesonotum and the posterior half of the scutellum have widely spaced longitudinal carinae. The epinotum is more convex from base to apex than in *bipunctatus*, and the sculpture is a little stronger, consisting of a network of prominent rugae with finer rugae in between the reticulations. The clypeus resembles that of *bipunctatus* but the median area is produced farther forwards and is carinate longitudinally. The brow of the facial concavity is arcuate. Scapes long, five times longer than their greatest width. Second joint of the flagellum two and a half times longer than wide at the apex, two-thirds longer than the third joint; the fifth joint not widened apically below. Head much narrower than in our other species, the greatest width being only one quarter greater than the length (measured from the anterior ocellus to the apex of the clypeus). It is distinctly narrower at the level of the posterior margin of the clypeus than it is across the upper margin of the eyes. The eyes are also less divergent above than in our other species. Petiole nearly three and a half times longer than its greatest width (across the node), very nearly as long as the second and third tergites united. The abdomen is narrower than in *bipunctatus* ♂.

Umgeni, Natal, March (C. N. Barker). Type in the Durban Museum.

*T. (Dasyproctus) Barkeri* n.sp. (figs. 42 and 42 a).

♀. 9–10 mm. long. Black; the apical third or more of the third to fifth tergites, including the lateral margins, yellowish translucent. The following parts are chrome yellow: scapes, an oblong mark on each side of the middle of the pronotal collar not reaching the shoulders, the pronotal tubercles and transverse bands, widely interrupted in the middle, on the second to fifth tergites. The band on the first is just before the middle of the segment, on the other three it is at the base, and those on the third and fourth are widened laterally. Tibiae, tarsi, apices of the femora and tegulae, ferruginous. First joint of the flagellum ferruginous, the rest black. Mandibles ferruginous, blackish at the base and apex, with a short streak of yellow on the upper margin near the base. Wings hyaline, faintly tinged with fuscous, the veins blackish brown. Pubescence of the clypeus, face and temples golden. On the vertex there is a thin brownish pilosity, and near the brow of the face and on the tergites an inconspicuous, sparse and yellowish pubescence; epinotal declivity with a greyish, exerted and scanty pilosity. Median area of the clypeus produced, narrowed towards the apical margin which is feebly angularly emarginate; on each side behind the apical margin there is a low dentiform angle. The median area has a low but distinct longitudinal carina. The facial concavity is deep, its brow obtusely angular. First and third joints of the flagellum subequal, the second joint two and a half times longer than

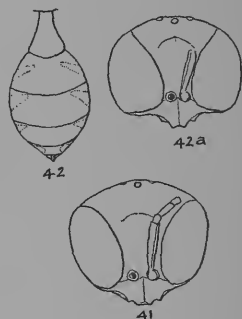


Fig. 41. *Dasyproctus angustifrons*, ♂, head.

Fig. 42. *Dasyproctus Barkeri*, ♀, abdomen; a, head.

its apical width and half as long again as the third. The vertex behind the brow of the facial concavity is shallowly and finely punctured; the mesonotum has a very fine puncturation, and from each puncture arises a short black hair, as in *bipunctatus*. The scutellum is finely and sparsely punctured, and its posterior half has a slight gloss and is strongly and fairly closely striate, with large punctures between the striae. Metanotum closely rugoso-punctate. Sides of epinotum closely and transversely striate; the dorsum has a triangular median area defined by shallow grooves at the sides, its sculpture and also that of the declivity resembles that of *D. dubiosus* Arn. but is coarser, especially the longitudinal rugae at the base, and the spaces between them are slightly shining. The petiole is much shorter than in any of our other species, even shorter than in *D. ruficaudis*; it is a little less than one-third longer than wide at the apical margin, and is not quite so long as the second segment plus half of the third. The abdominal complex behind the petiole is ovate, not quite one quarter longer than wide at its widest, *i.e.* across the middle of the third tergite. Pygidial area shining, of the usual Y-shape, the apical half deeply excavated, the sides densely fringed by long and thick yellowish setae.

Durban, Umgeni and Malvern, Natal, March–April (C. N. Barker). Nesting in dry stems of the Kaffir-boom. Types in the Durban Museum, paratypes in the Rhodesia Museum.

*T. (Dasyproctus) bipunctatus* Lep., var. *lugubris* v.n.

♀. 8 mm. long. Scapes yellow, with a black streak behind on the basal half. A mark on each side of the second tergite and a transverse bar on the middle of the fifth tergite yellow, as in the type of the species, otherwise the body, including the tegulae, is entirely black. Anterior tibiae and tarsi ferruginous, the middle tibiae fusco-ferruginous, the rest of the legs black. Wings pale fusco-hyaline. Otherwise like the type of the species.

♂. 7 mm. long. Scapes with a smudge of yellow near the apex, the anterior tibiae and tarsi ferruginous, otherwise entirely black, and like the type of the species.

Vumbu Mts., Umtali, S.R., February (G. Arnold).

In coloration this variety resembles the race *funereus*, but the petiole is not so short and thick as in that race, being of the same proportions as in the type of the species.

Types in R.M. coll. (R.M. and T.M. colls.)

*T. (Cuphopterus) glabricornis* Arn.

♀ (hitherto undescribed). 11.5 mm. long. A specimen in the Durban Museum appears to be the ♀ of this species, in spite of certain differences in colour and sculpture which are probably only sexual.

The first six joints of the flagellum are ferruginous, the rest blackish. The scapes are entirely yellow. Mandibles ferruginous, with a yellow suffusion outside at the base. Clypeus entirely yellow. The yellow marks on the first abdominal segment are more extensive than in the ♂, extending over the outer third of the tergite on each side, and nearly the whole of the fifth is dirty yellow; the fourth immaculate, the pygidium ferruginous. The middle and hind coxae and trochanters are ferruginous above, yellow below. Pronotal collar and tubercles ferruginous. Median area of the clypeus longitudinally carinate in the middle, the anterior margin with three blunt teeth. Second joint of the flagellum as long as the third and fourth united, three times longer than its apical width (in the description of the ♂ the measurement of the second joint was erroneously stated to be half as long as the third, it should be "half as long again as the third"). The dorsum of the epinotum, outside

the median area, and the declivity are shining, finely, shallowly and fairly closely punctured. The first tergite is three-fourths longer than wide at the apex. Pygidial area triangular, sparsely and coarsely punctured, longer than wide at the base, the apex narrowly rounded. Middle tibiae without a carina on the upper surface. Temples without a sharp angle. Otherwise like the ♂.

Natal. Type in the Durban Museum.

*Thyreopus Crippsi* n.sp. (figs. 43 and 43 a).

♀. 12 mm. long. Black; mandibles, pygidium, apices of the femora and the tibiae ferruginous; tarsi and tegulae fusco-ferruginous; the last joints of the tarsi black; scapes lemon yellow. Wings pale fusco-hyaline, veins and stigma blackish.

Clypeus with pale golden pubescence, the sides of the face and the vertex with brownish yellow pubescence. Temples and thorax, especially the sides of the latter, with a fine pubescence and a greyish outstanding pilosity; the latter is fairly dense but does not obscure the sculpture. The tergites have a yellowish pubescence, much more abundant on the fourth and fifth tergites than elsewhere, making those segments appear somewhat brown. Clypeus, face and vertex dull, closely and finely punctured, the vertex almost coriaceous, a narrow median impression on the face smooth and shining. Behind the ocelli and on the temples the surface is slightly shining, sparsely, finely and very shallowly punctured. Pronotal collar dull and almost smooth; mesonotum and scutellum dull, evenly, closely and finely striate lengthwise, the scutellum with some puncturation between the striae. Mesopleurae in front of the episternal suture dull and transversely striate, behind it slightly shining, very sparsely covered with small elongate punctures; the mesosternum with similar sculpture. Disc of metanotum sparsely punctured, slightly shining. Declivity and sides of the epinotum dull, microscopically rugulose. The dorsum of the epinotum has a median area which is clearly defined only at the sides and base, almost dull, the basal fourth longitudinally rugose, the rest sparsely and superficially punctured, the lateral areas of the dorsum obliquely and finely rugose; the median area has a longitudinal groove which is sharply marginate and is continued into the median groove of the declivity. Tergites slightly shining, more especially the first three, microscopically rugulose and sparsely punctured. Sternites smooth and shining, the fourth and fifth with preapical rows of punctures, the apical half of the sixth finely punctured, the second with a transverse torus on the basal margin. Prosternum with the outer lower angles produced and dentiform. Median area of the clypeus rhomboidal, wider than long, carinate lengthwise in the middle, the anterior margin narrowly excised in the middle. Head wider than long, as long behind the posterior ocelli as in front of them. The eyes are enlarged below and the facets in that part are larger than the rest. Antennal sockets contiguous with each other and with the inner margins of the eyes. Scapes long; the first five and the apical joints of the flagellum longer than wide, the second joint three times longer than wide at the apex, and fully half as long again as the first. Ocelli large, the posterior pair separated from the anterior ocellus by less than half their diameter, and from the inner margin of the eyes by a little more than twice their diameter. Lateral

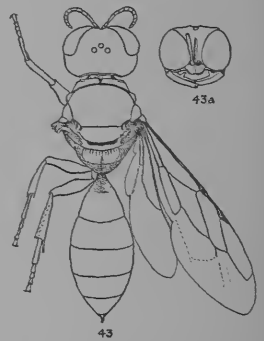


Fig. 43. *Thyreopus Crippsi*, ♀; a, head.



foveae on the vertex are absent. Pronotal collar strongly convex from front to back, impressed in the middle, the shoulders subangular. Mesonotum fairly convex, two and a half times longer than the scutellum; the latter is wide, and about twice as wide in front as long in the middle. The suture between it and the metanotum is wide and deep. Dorsum of the epinotum a little shorter than the scutellum. Abdomen lanceolate-ovate, two and a third times longer than wide in the middle, the first tergite narrowed towards the base, as long as wide at the apex and as long as the second tergite plus two-thirds of the third. Pygidial area narrow, and of the same shape as in *Dasyproctus*. Posterior tibiae with two rows of very short spines on the outer margin; the metatarsus long, very little shorter than the tibia.

Vumbu Mts., Umtali, S.R., February (G. Arnold), 1 ♀. Type in R.M. coll.

Named in honour of Mr Lionel Cripps, to whose kind hospitality I owe several opportunities for studying the insect fauna of a very interesting region of S. Rhodesia. This species runs down in Kohl's key to *Thyreopus* (Crabro) s.str. and more or less to the *quadricinctus* group.

*T. (Rhopalum) Turneri* n.sp. (figs. 44 and 44 a).

♀. 5.8 mm. long. Black. The following parts are pale yellowish white: the scapes excepting a fuscous streak on the apical half behind, the upper surface of the anterior and middle tibiae, the basal third above of the hind tibiae, the metatarsi and palpi. The second to fourth joints of the tarsi pale ochreous, the apical joint fuscous. Mandibles ferruginous; the trochanters yellowish brown. Wings pale fusco-hyaline, the veins and stigma black. Clypeus, face and temples with a sparse silvery pubescence, the rest of the body with a sparse, greyish and microscopic pubescence. Clypeus finely coriaceous and dull. Facial groove smooth and shining. Vertex and temples shining, exceedingly finely punctured, the punctures fairly far apart except near the brow of the face where they are larger and nearer together. Pronotum shining, the punctures microscopic. Mesonotum and scutellum shining, more strongly punctured than the vertex, but the punctures are small, shallow and far apart. Mesopleurae shining and impunctate. Metapleurae transversely striolate. Sides of epinotum nearly dull, microscopically and transversely aciculate; the dorsum and declivity shining, the former with a very shallow, oblique and close striation, barely visible with a magnification of less than 30 diameters. The dorsum has a few short rugae on the basal margin, and a median longitudinal marginate groove which is widest at the base and is continued into the fairly deep median groove of the declivity. Abdomen smooth and shining. Pygidial area longer than wide at the base, slightly excavated, the sides concave, the apex truncate.

Mandibles bidentate at the apex, the inner upper margin with a low tooth at about the middle. Median area of the clypeus strongly carinate in the middle and produced in front; its anterior margin is transverse, rectangular and somewhat tuberculate at the corners; on each side of, and at some distance from the produced portion there is a blunt tooth. Antennal sockets contiguous with each other and with the inner margins of the eyes. First joint of the flagellum as long as the second, and slightly longer than the third. Ocelli arranged in an equilateral triangle, the posterior pair nearer each other than they are to the eyes. Inferior margin of the temples raised, ending in front in a blunt angle. Pronotal collar convex from front to back, about as long

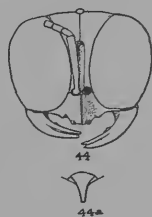


Fig. 44. *Rhopalum Turneri*, ♀, head; a, pygidium.

in the middle as at the sides, the shoulders rounded. There is a small but quite distinct epicnemium on the mesopleurae in front. Mesosterna with a raised line in front of the middle coxae, which ends outwardly in a sharp angle. Mesonotum convex, about one quarter wider across the tegulae than long in the middle, two and a half times longer than the scutellum; the suture between the mesonotum and scutellum ends on each side in a deep pit. First segment of the abdomen hardly petiolate, subconical, barely three times wider at the apical margin than at the base, only a little longer than wide at the apical margin; seen from the side it is strongly curved downwards towards the base and is barely longer than the second segment. The whole abdomen oblongo-ovate, widest across the third segment, about two and a half times longer than wide. Posterior tibiae swollen beyond the middle, and narrowed again at the apex, armed with a few short reddish spines on the outer margin. The transverse cubital vein on the forewing meets the radius at its basal third, and the discoidal meets the cubital a little before its middle. Basal lobe of the hindwing as long as its submedial cell.

Port St Johns, Pondoland, October (R. E. Turner), 1 ♀. Type in the British Museum.

This species exhibits some characters which are aberrant for the *Rhopalum* species-group, such as the presence of a distinct epicnemium and the absence of a distinct petiole. The position of the antennal sockets places it in the subgroup *Corynopus* Lep.

*T. (Rhopalum) ichneumoniformis* n.sp. (figs. 45, 45 a and b).

♀. 5.7 mm. long. Black. Fore and middle legs including the trochanters, basal fourth of the hind tibiae, scapes and pronotal tubercles, pale lemon yellow. Posterior trochanters more or less yellowish brown at the apex. Flagellum brown, paler below. Tegulae pale ochreous. Mandibles ochreous, the apical fourth fusco-ferruginous, the apex bidentate. Sternites and basal half of the petiole more or less rufous brown (pale burnt sienna). Wings hyaline, stigma and veins black. Clypeus with a dense silvery pubescence; a similar but very scanty pubescence also covers the lower half of the temples, the mesosternum and declivity of the epinotum. Elsewhere there is only a microscopic, sparse and greyish pubescence. Head and thorax shining, the vertex sparsely and exceedingly finely punctured, the temples microscopically so, the mesonotum with very fine punctures, which, however, are larger than those on the vertex and are separated by spaces about three times the diameter of a puncture. Mesopleurae and epinotum impunctate; the dorsum of the latter with a few short carinae at the base and a median impressed line which joins the groove on the declivity. Abdomen smooth and moderately shining. Pygidial area dull, triangular and flat, longer than wide at the base, the apex subacute. The structure of the clypeus is obscured by the dense pubescence, but if this be removed, the surface is seen to be finely punctured. The median area is not much produced, not carinate longitudinally in the middle, its anterior margin transverse and armed with four blunt teeth.

The width of the face at the level of the antennal sockets is equal to the

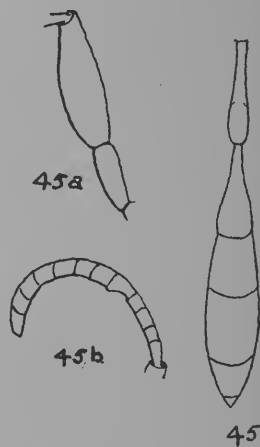


Fig. 45. *Rhopalum ichneumoniformis*, ♀, abdomen; a, trochanter and femur of foreleg, ♂; b, flagellum of ♂.

length of the second and third joints of the flagellum. Between the antennal sockets there is a small oblong projection, the anterior margin of which is angularly excised. Face with a median impressed line, only feebly concave. Scapes relatively shorter than in *R. Turneri*, the first joint of the flagellum nearly as long as the third and nearly twice as long as the second. Ocelli arranged in an equilateral triangle, the posterior pair twice as far from the eyes as they are from each other. Pronotal collar shorter in the middle than at the sides, the anterior margin tumid. Mesonotum two and a third times longer than the scutellum, the latter not much wider than long. Petiole unusually long and slender and distinctly nodose; it is four times longer than wide across the node, and as long as the second segment plus two-thirds of the third. The rest of the abdominal complex is elongate and clavate, the second segment at its base narrower than the node of the petiole and three times wider across the apical margin than at the base. The trochanters of the fore and middle legs are distinctly long, being nearly half as long as the femora. Second abscissa of the radius two and a half times longer than the first. The transverse cubital vein meets the radius a little beyond its middle.

♂. 4 mm. long. Ventral surface of the abdomen black. Sides of the epinotum smooth and shining. First joint of the flagellum a little longer than the second, the fifth joint arcuately emarginate at the base. Trochanters of the fore and middle legs fully half as long as the femora. Otherwise like the ♀.

Mossel Bay, C.P., January (R. E. Turner). Several examples of both sexes. Types in the British Museum.

In the elongation of the trochanters this species shares a character which is distinctive of the *Tracheliodes* species-group.

## NOTES ON SOME ASILINAE OF THE SOUTH AFRICAN REGION

BY DR E. O. ENGEL

*Munich*

With 37 Text-figures

THE African genera of Asilinae included in this paper belong chiefly to the *Dysmachus* group and may also be found in Loew, *Dipterenfauna Südafrika's*, 1860, p. 146, "Key to genera," sub letters A, I.

It is the purpose of these lines to show: (1) that the genus *Heligmoneura* Bigot is not only not synonymous with *Mochtherus* Loew (*Neomochtherus* O-S.), but must be placed wide apart from this genus in the system; and (2) that the genus *Dysmachus*, as taken in Kertes' *Catalogus dipterorum hucusque descr.*, contains two quite different forms of Asilinae which possess only superficial similarity to each other.

Macquart was already convinced of the necessity to separate his *Lophonotus* from *Dysmachus*. Loew followed his example in *Dipterenfauna Südafrika*, 1860, and indicated, in *Dipt. of N. Am.*, 1862, another criterion of still greater importance, but without using it, viz. that the lateral callosities (or humps) of metanotum may be hairy or bare (in other terms, the parts at the sides of the metaphragma which are hairy or bare).

This dividing line was used by Prof. Hermann in an unpublished key of *Asilidae orbis terrarum*, and by myself in *Bull. Soc. Roy. Ent. d'Égypte*, 1925, p. 346, where I proposed to separate from *Dysmachus* those species with bare lateral callosities of metanotum, and assumed the changed name *Neolophonotus* for them, because they agree generally with the old genus *Lophonotus* sensu Macqu. et Loew.

The number of *Asiline* genera (and subgenera) which show the mentioned criterion (bare metanotal callosities) is only small, and of this number the following genera occur in Africa and adjacent faunistic regions: *Promachus*, *Alcimus*, *Philodicus*, *Apoclea*, *Ommatius* and *Ommatinus*; while the genera *Neolophonotus* sensu lat., *Dysclytus* and *Synolcus* are of specific African origin. Especially the last; since Becker in his *Asilinae* III, Sauter's *Formosa-Ausbeute*, *Ent. Mitt.* Bd. XIV, 1, 1925, separated from it the Asiatic forms with hairy metanotal callosities under the name *Clephyroneura* Beck.

Had Loew used this criterion when he tabulated our genera in the above-mentioned key, he would have found that *Mochtherus* only possessed hairy metanotal callosities, and that all others have bare ones; and had he known both sexes of *Heligmoneura* Bigot, he would never have united it with *Mochtherus*, as he did p. 145, *Dipterenfauna*, "Die Gattung *Heligmoneura* Bigot, etc." But he laid the greatest stress on wing venation and overlooked that in Bigot's genus the ovipositor has

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## TRANSVAAL MUSEUM

THE SPHEGIDAE OF SOUTH AFRICA. PARTS IX &amp; X

By GEORGE ARNOLD, D.Sc., A.R.C.Sc., F.E.S.

STONE AGE CULTURES ON THE ZULULAND HIGHFELD  
AND IN NORTHERN NATAL

By Dr V. LEBZELTER AND F. K. O. BAYER

*Issued 26 March, 1928*PRINTED AT THE UNIVERSITY PRESS  
CAMBRIDGE, ENGLAND

1928

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ANNALS

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TRANSVAAL MUSEUM

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VOL. 12

PART 3

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## THE SPHEGIDAE OF SOUTH AFRICA

BY GEORGE ARNOLD, D.Sc., A.R.C.Sc., F.E.S.

*Curator of the Rhodesia Museum, Bulawayo*

## PART IX

With 1 Plate and 18 Text-figures

## AMPULEX Group

THIS group comprises four genera, of which *Aphelotoma* Westw. is confined to Tasmania and *Trirogma* Westw. to the Indian and Malayan Region. Of the remaining genera *Dolichurus* Latr. is a small and well-defined genus with five African species and a few others in other parts of the world, and *Ampulex* Jurine, a large and widely distributed one with about 90 species, of which 39 are found in the Ethiopian Region.

GENERAL CHARACTERS. Eyes large, reaching the base of the mandibles or nearly as far, their inner margins parallel or converging above. Ocelli round and normal. Maxillary palpi 6-, labial palpi 4-jointed. Antennae 12-jointed in the ♀, 13-jointed in the ♂; the flagellum long and filiform. Episternal suture sometimes present, an epicnemium absent. Prothorax long, the collar well developed. Epinotum quadrate, the dorsum with two or more distinct and oblique carinae or reticulate-rugose, the posterior lateral angles dentiform (except in *Aphelotoma*), or the lateral margins of the declivity dentate at about the middle. Abdomen more or less petiolated (except in *Dolichurus*), the petiole formed by the first tergite and sternite. The apical segments of the abdomen in the ♀ more or less compressed transversely in *Ampulex*, those of the ♂ very short and with the sternites reduced, and more or less invaginated within the third segment. A pygidial area is absent. Anterior wing with two or three cubital cells and two recurrent veins. Middle tibiae with two spurs. Claws with one or two teeth.

The sculpture of the epinotal dorsum usually consists of a medium longitudinal carina or sharply defined ruga, and four oblique ones on each side of it. Their length and distance apart vary in the different species and afford thereby a character of some diagnostic value. For this purpose they are

referred to by numbers, the middle one being carina No. 1, and those on each side of it 2, 3 and 4.

The spaces between the longitudinal carinae are covered by transverse carinulae, often inaccurately described as striae by some authors. These carinulae are usually largest and more widely spaced in the interval between the median and second carinae than elsewhere. (In the text-figures these carinulae, and the irregular rugae which cover the areola between the apex of the median carina and the posterior margin of the segment, have been omitted.)

#### Genus DOLICHURUS Latr.

*Gen. Crust. et Insect.* IV, p. 387. 1809.

**CHARACTERS.** Mandibles acute at the apex, with two small teeth just behind the apex in the ♀, and with one tooth behind the apex in the ♂. In both there is an angular projection on the inner margin near the base. The lateral sclerites of the clypeus are not defined, being completely fused with the median area. Antennae inserted under a tegular protuberance which arises from the lower half of the face. All the joints of the flagellum, excepting the first, very much longer than wide. Pronotum large, as high as the mesonotum. The latter is divided lengthwise into three subequal parts by two deep sulci. The ♀ usually has four macrochaetae on the clypeus, two rows of the same on the face, and a pair or more on the pronotum and scutellum. The pronotal tubercles extend back as far as the tegulae. Scutellum large and flat, with a deep transverse groove just behind its anterior margin. Lateral margins of the epinotal declivity furnished with a triangular tooth near or below the middle. Apical margin of the first tergite widely depressed and transversely rugulose. First sternite raised in the middle to form a low and more or less wedge-shaped prominence; second sternite abruptly truncate at the base.

**Forewing.** Radial cell lanceolate, without an accessory cell, the radius ending at the costa. Three cubital cells, the second and third receiving the first and second recurrent veins respectively; the basal vein arises some distance beyond the end of the submedial cell.

**Hindwing.** The retinaculum arises a little beyond the origin of the radius; the cubitus is emitted before the apex of the submedial cell. Basal lobe small and round.

Posterior femora swollen near the base, more or less clavate. The ♂♂ are usually considerably smaller than the ♀♀.

**Distribution.** Palaearctic, Ethiopian, Neotropical and Australian Regions.

The insects of this genus, like *Ampulex*, provision their young with cockroaches. Very little is known about their life-history.

Judging by a fairly large series of *D. ignitus* and *D. bimaculatus*, the venation in this genus varies too much within the species to afford a diagnostic character of the slightest value.

*D. ignitus* Smith (figs. 1 and 1 a-c). *Trans. Ent. Soc. London*, p. 304, ♀. 1869.

♀. 8.5-9.5 mm. long. Black. Mandibles, anterior margin of the clypeus in the middle, extreme base of the scapes, anterior and middle tarsi and extreme apices of the anterior and middle femora, anterior tibiae and last three segments of the abdomen, ferruginous. Tibiae of the middle and hind legs dark brown, their tarsi fusco-ferruginous. Wings hyaline, the veins and stigma black.

Clypeus with a sparse outstanding pubescence and four black macrochaetae, the inner pair inserted near the middle, the outer pair at about the outer fourth. Lower half of the face with a long, decumbent and whitish

pubescence, the temples and sides of the thorax with a sparse, exserted and whitish pilosity. There are about six macrochaetae on the head above the antennal plate, and three on each side of the scutellum.

Clypeus shining, produced in the middle, the apex of the projection transverse, with the corners rounded, the rest of the anterior margin concave on each side. The basal half or more of the median portion is tumid, and has a poorly defined longitudinal carina. Lower half of the face, as far as the base of the antennal plate, coriaceous; beyond that point and as far as the ocellar area it is shining, obliquely and not closely rugose, shallowly punctate between the rugae, the latter smooth. The rugae extend over the antennal plate, which is longitudinally carinate in the middle, the carina almost reaching the anterior ocellus. The antennal plate is concave transversely, with the lateral margins sharply carinate, and the anterior half of the sides swollen.

Vertex and temples shining, the former sparsely and coarsely punctured, the latter very shallowly so. Ocelli arranged in an equilateral triangle, the posterior pair a little nearer to the eyes than they are to each other. Pronotum polished, the anterior face of the collar and the extreme front of the dorsal face, the sides at the middle and at the base with a few broad transverse rugae. The collar is sharply marginate in front, the raised margins being continued to the slightly lower and angular shoulders. On each side, behind the middle, its dorsal face is raised into a broad, sub-conical tubercle, wider than high. Mesonotum and scutellum very shining, with a few fine and scattered punctures. Mesopleurae and mesosternum rugose, partly reticulate, fairly dull, the rugae low and close together. Metapleurae smooth and shining. Sides of the epinotum obliquely and strongly rugose, the rugae attenuated towards the anterior margin; dorsum of epinotum with

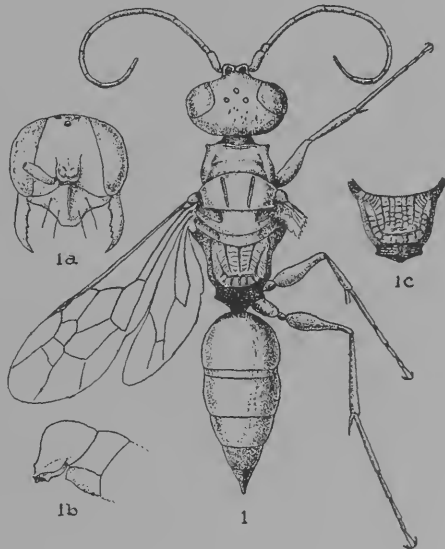


Fig. 1. *Dolichurus ignitus*, ♀. a. Head. b. Base of abdomen. c. ♂, epinotum.

three median longitudinal carinae which do not reach the posterior margin, and a continuous carina which forms the lateral and posterior margins of the segment. Between the latter and the inner longitudinal carinae there are oblique carinae on each side and posteriorly. The spaces between the longer carinae are shining and have a few transverse rugae. The dorsum of the epinotum is about one-fourth wider at the apex than long in the middle. The declivity of the epinotum is dull, transversely rugose, but with a few short vertical rugae in the middle above. Its lateral margins have a short triangular tooth below the middle. Abdomen smooth and shining, with a very few small and scattered punctures, the last segment truncated at the apex. Distance between the eyes on the vertex equal to the length of the second joint of the flagellum; the latter is a trifle more than one-fourth longer than the third joint. The mesonotum is about one-third longer than the pronotal collar, and as long as the scutellum and metanotum united.

♂. 7-7.5 mm. long. Apical margins of the last four abdominal segments fusco-testaceous, otherwise entirely black, including the legs. Clypeus and



face below the antennal sockets with long whitish pubescence, much more abundant than in the ♀. The pilosity on the thorax is also more abundant. Sculpture of the face and vertex much weaker than in the ♀, the rugae on the former distinctly low and ill-defined, the punctures on the vertex very shallow, the antennal plate smooth and shining. The dorsum of the epinotum differs from that of the ♀ by having a different sort of sculpture; the longitudinal carinae are less distinct, not stronger than the transverse ones, and the middle longitudinal one present in the ♀ is replaced by two irregular rugae (see fig. 1 c). Tergites much less shining than in the ♀, almost dull, microscopically alutaceous, finely, shallowly and not closely punctured, the puncturation distinctly sparse in the middle. Sternites dull, shallowly and very finely punctured. Clypeus not produced, its anterior margin convex from end to end, longitudinally carinate in the middle, the carina projecting over the anterior margin as a small tooth. The antennal plate arises from the face more abruptly than in the ♀, and is therefore shorter; it is shallowly impressed lengthwise in the middle and feebly convex on each side, and its anterior and lateral margins are sharp, not swollen as in the ♀. Second joint of the flagellum not longer than the third. Pronotal collar shorter than in the ♀ owing to the part in front of the posterior tubercles sloping rapidly downwards and forwards; the tubercles are somewhat thicker than in the ♀ and the anterior angles are less prominent. Otherwise like the ♀, excepting the sexual differences in the shape of the abdominal segments.

Natal; Sawmills, Bulawayo and Umtali, S. Rhodesia. October–February. Usually seen running up and down the trunks of trees searching for small cockroaches in the crevices of the bark. (R.M. coll.)

*D. rubripyx* Brauns (*nom. in litt.*).

♀. 8.5 mm. long. Very closely allied to *ignitus*, if not a race of that species. Posterior tibiae slightly paler than in *ignitus*, otherwise like that species in colour. The sculpture of the epinotum is stronger and the declivity reticulate-rugose. The mesopleurae are obliquely rugose, without reticulations. The joints of the flagellum are relatively slightly shorter than in *ignitus*, and the second joint is only one-eighth longer than the third. The head behind the eyes is narrower and longer; the distance from the level of the posterior ocelli to the occipital margin is as long as the second joint of the flagellum, whereas in *ignitus* it is only half as long. The interocular distance on the vertex is greater, being equal to the length of the second joint of the flagellum plus three-fifths of the third. The dorsum of the epinotum is shorter, being two and a quarter times wider (a little beyond the middle) than long in the middle, whereas in *ignitus* it is widest at the middle and only twice as wide there as long. The venation differs a little from that of *ignitus*, but no reliance can be placed on the venation in this genus. Otherwise like *ignitus*.

Willowmore, November. 1 ♀ bred from the larva. Type in coll. Brauns.

*D. venator* n.sp. (figs. 2 and 2 a).

♀. 9 mm. long. Black, the last two abdominal segments and the apical half of the fourth, pale ferruginous. Apical fourth of the mandibles fusco-ferruginous. Very much like *ignitus*, from which it differs as follows.

Face shallowly rugoso-punctate, the rugae ill-defined, the punctures elongate and shallow. Sides of pronotum smooth, without striae. Mesopleurae punctured, without vertical rugae, the punctures large, shallow and fairly close together. Dorsum of epinotum with a widely spaced rugose reticulation, the rugae not emphasised longitudinally, *i.e.* without sharply defined carinae; the sculpture on this segment resembles that of the male

of *ignitus*, rather than of the female. Apical segment of the abdomen slightly depressed from the middle to the apex, longer and relatively narrower than in *ignitus*. The median area of the clypeus is not produced so far forwards as in *ignitus*, and the projection is wider at the apex. The carina at the base is less distinct. The clypeus in the middle is only one-third longer than it is wide across the anterior margin of the median area. The antennal plate is shorter and its margins are raised at the sides, not thickened as in the other species. Second joint of the flagellum one-sixth longer than the third. Interocular distance on the vertex equal to the length of the second joint of the flagellum. Pronotal collar tumid behind, but without tubercles; there is a shallow median longitudinal impression, and on each side of it and a little in front of the middle, a shallow oblong pit. The lower anterior angles or shoulders are much less prominent. Mesonotum in the middle twice as long as the pronotal collar.

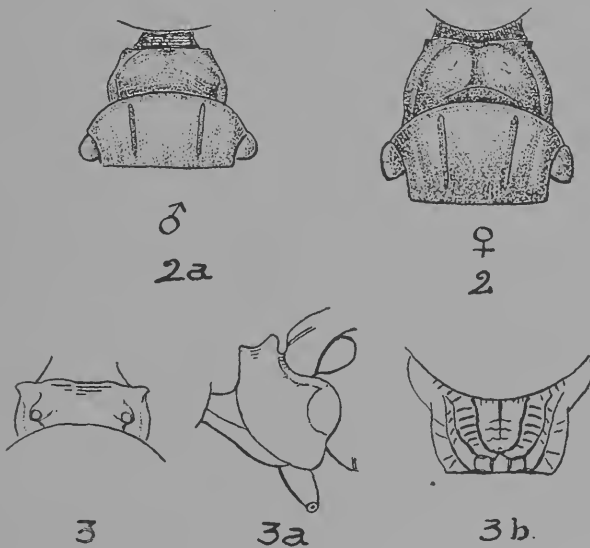


Fig. 2. *Dolichurus venator*, ♀, promesonotum. a. ♂.

Fig. 3. *Dolichurus bimaculatus*, ♂, pronotum. a. Pronotum, lateral view. b. Epinotum.

♂. 6 mm. long. Black. Pilosity and pubescence longer and more abundant than in the ♀, especially on the head and thorax; apical margins of the third-fifth sternites fringed with white pubescence. Face shallowly rugoso-punctate, and slightly glossy; the vertex shining, sparsely and very shallowly punctured. Anterior face of the pronotal collar and the mesopleurae shallowly and not closely punctured. Scutellum with a few fine punctures along the lateral and posterior margins. Dorsum of epinotum almost dull, longitudinally rugose in the middle, obliquely and transversely so at the sides. Tergites shining, finely but sharply punctured, the punctures few and scattered. Sternites less shining, microscopically punctured. The first three tergites very convex lengthwise, so that the second and third appear to be constricted at the base. Clypeus convex, carinate in the middle, the anterior margin convex. Second and third joints of the flagellum of equal length. Interocular distance on the vertex a little shorter than the length of the second and third joints of the flagellum. Pronotal collar more tumid on each side than in the ♀; the outline of the tumid areas when viewed from above is oblique and semi-elliptical. Otherwise like the ♀.

Bulawayo. April–December. Types in R.M. coll.

*D. Kohli* Brauns (*nom. in litt.*).

♀. ca. 6.6 mm. long (the head and thorax together 3 mm. long, the abdomen being curled under in the unique specimen cannot be accurately measured). Black, apices of the mandibles fusco-ferruginous, the tibiae and tarsi blackish brown. Mandibles, clypeus, middle of the face, vertex, pronotum and scutellum with a few long, erect and black macrochaetae. Temples with a few whitish hairs, lower margins of the sides of the thorax above the coxae with a little white pubescence. Shining, only the face below the anterior ocellus and the declivity of the epinotum slightly dull. Clypeus smooth and shining.

Lower two-thirds of the face closely rugoso-punctate at the sides, less closely in the middle; the antennal plate is concave, smooth and shining, except over the basal third which is rugose, slightly longer than wide, parallel-sided, and rounded at the apical margin. The upper third of the face, the vertex, occiput and temples sparsely punctured, the punctures fairly strong on the face and vertex, small and very shallow on the other parts; the spaces between the punctures are mostly two or three times the width of the largest puncture. The anterior face of the pronotal collar is closely, finely and shallowly punctured; the dorsal face resembles that of *D. venator* but is a little shorter and its median longitudinal impression is not so deep. Mesonotum with a few punctures along the anterior and lateral margins; scutellum with two large and shallow punctures at the sides. Metanotum closely and obliquely striate. Mesopleurae closely and finely punctate in front, coarsely and sparsely over the posterior two-thirds. Sides of epinotum transversely rugose, the rugae becoming gradually smaller in front; the declivity is closely and transversely rugose and the dorsum reticulate-rugose, not clearly carinate lengthwise, since the longitudinal rugae are no stronger than the transverse ones. Abdomen smooth and impunctate. Clypeus half as long again in the middle as wide across the anterior margin of the median area. Eyes moderately convergent above and below, the face very little wider below (at the level of the lower margin of the eyes) than above at the level of the posterior ocelli. Interocular distance on the vertex equal to a very little more than the length of the first two joints of the flagellum. The second joint of the flagellum is two-sevenths longer than the third. The distance between the posterior ocelli is the same as their distance from the eyes. The declivity of the epinotum has a blunt angle on the lateral margins below the middle, not a sharp tooth as in *venator*.

Willowmore, September (Dr H. Brauns), 1 ♀. Type in coll. Brauns. I assign specific rank to this insect with considerable hesitation, since the study of a larger amount of material might well prove it to be only a race or variety of *venator*.

*D. bimaculatus* n.sp. (figs. 3, 3 a and b).

♂. 4.3-6 mm. long. Black; mandibles, antennae, tibiae, tarsi and apices of the femora, ferruginous. A round spot on each side of the middle of the clypeus, the anterior margin of the antennal plate, and an oval spot on the apices of the tubercles of the pronotal collar, ivory white. Sometimes, and chiefly in the smaller examples, the antennae and tibiae are darker, the former in some cases almost black; and in one small specimen the white spots are absent from the clypeus and pronotum. Tegulae piceous, with a whitish mark in front. Wings hyaline, the veins and stigma black. Clypeus and lower third of the face covered with whitish and rather long pubescence. The temples and thorax have a sparse, exserted and white pilosity. The face, from the base

of the antennal plate to the posterior ocelli, is widely reticulate-rugose and moderately shining; vertex and occiput shining, sparsely punctured with large shallow punctures. In small specimens the sculpture of the head is often more or less obliterated. Temples smooth and shining. Pronotum shining, the collar with a few transverse rugae behind the anterior margin. On each side of the pronotal collar posteriorly there is a subconical tubercle, truncated at the apex and directed obliquely outwards and backwards. Mesonotum and scutellum shining, sparsely, finely and shallowly punctured. Metanotum dull, rugulose. Mesopleurae and sides of the epinotum fairly dull and obliquely, closely striated. Dorsum of epinotum shining; the first or median carina is short, the space between it and the second carina is transversely rugose in the apical half, the space between the second and third carinae has six strong transverse rugae, and that between the third and fourth has four weaker rugae. The declivity is dull, irregularly rugose, the lateral margins with a small dentiform angle below the middle. Tergites and sternites 1-3 nearly dull, sharply, fairly finely and closely punctured, the punctures smallest and crowded on the third segment, the sternite of that segment with the apical margin widely and abruptly depressed. Clypeus not so convex as in *ignitus* or *venator*, carinate longitudinally in the middle, the anterior margin concave over the middle third. Second joint of the flagellum barely longer than the third. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus four-fifths of the third. Mesonotum two and a half times longer than the pronotal collar.

Bulawayo and Fort Rixon, S. Rhodesia, August-January. Numerous ♂♂. Type in R.M. coll.

Allied to the European *D. corniculus* Spin. but smaller and with ferruginous tibiae and tarsi.

#### Genus AMPULEX Jurine

*Nouv. méth. de class. Hymén.* p. 132. 1807.

CHARACTERS. Mandibles sickle-shaped in the ♀, when closed there is a gap between them and the margin of the clypeus; in the ♂ there is a strong tooth just behind the acute apex. Clypeus tectiform and strongly carinate, except in a few species, the carina ending in a tooth on the anterior margin. In the ♀ there is usually a tooth on each side of the median one. Eyes margined by a narrow, impressed and punctate line. Antennae filiform and long, as in *Dolichurus*, the second joint of the flagellum the longest. The antennal sockets are situated below a median plate which differs from that of *Dolichurus* in not being porrect; except near the apex it lies flat and parallel to the plane of the face so that posteriorly only the lateral margins rise above the general level of the face. These margins form the frontal carinae (as in Myrmicine ants) and sometimes extend back to behind the anterior ocellus. Sometimes there is a median carina between them. Pronotum large, the collar decidedly long, often as long as wide or as long as the mesonotum. The pronotal tubercles do not extend back quite as far as the tegulae. Mesonotum divided into three longitudinal areas by two deep grooves as in *Dolichurus*, and deeply excavated at the posterior corners. Scutellum traversed by a deep and sharply clathrate groove behind its anterior margin. Metanotal disc usually covered with a dense decumbent pubescence. Epinotum horizontal above, the declivity vertical, the posterior lateral angles of the dorsum nearly always produced into teeth, the surface with a median carina and four slightly oblique ones on each side, the spaces between more or less closely and transversely carinate.

Abdomen with a short petiole, formed in greater part by the first sternite; in the ♀ the posterior part of the abdomen is laterally compressed, in the ♂ depressed and invaginated to a large extent into the third segment.

Forewing. The apex of the radial cell does not end on the costa but lies a little below it. Three cubital cells usually present, but in some species only two are apparent owing to the obliteration of the first transverse cubital vein. The genus *Rhinopsis* erected by Westwood for the species with only two cubital cells is a purely artificial one, since some species which normally have three cubital cells may sometimes exhibit only two. The first recurrent vein enters the first cubital cell and the second enters the third. The basal vein arises either at the end of the first submedial cell or a little before it. Second submedial cell much shorter than the first.

Hindwing. Cubital vein interstitial with the apex of the submedial cell, or arising just behind it. Retinaculum unbroken. A basal lobe is absent, and the anal vein terminates behind the sinus formed by the anal lobe.

Legs long; the coxae very large, the posterior pair separated by a lamella which is bifurcate posteriorly. The fourth tarsal joint is usually enlarged and the apical joint is inserted at its base. The ventral surface of the fourth joint is densely pubescent, and the apical joint lacks a pulvillus. The claws have a tooth on the inner margin near the middle or near the apex, in the latter case the claws appear almost bifid.

Distribution. Both hemispheres.

These insects provision their young with cockroaches. They do not appear to make special nests in which to lay their eggs and store the provender but drag their prey to any convenient hole or crack in the ground.

The genus in the Ethiopian Region is a large one, and out of the total of 39 species I have seen examples of only 16. The genus was monographed by Kohl in 1893 (*Ann. K.K.N.H. Mus. Wien*, VIII, Hefte 3 and 4), and since that time only ten new species have been added to the list for the Ethiopian Region.

In the majority of the species the coloration of the body consists of metallic greens, blue-greens and purple, but it is to be noted that, as in the Chrysididae or Cuckoo-wasps, the colour has a tendency to darken with the drying-up of the body after death, so that the greens may become blues, and the latter turn to purple.

Owing to the monotonous uniformity in the structure of the majority of the species, the student will have some difficulty in identifying many of them. The material available for study in most museums and private collections is not plentiful, with the result that our knowledge of the range of variation of certain characters is very limited. I have seen, however, a fair number of specimens of two species, *denticollis* Cameron and *cyanura* Kohl race *rhodesiana*, and as a result of the study of that material I am inclined to believe that at least two characters which some authors have regarded as of importance are too variable to be reliable. One is the structure of the clypeus and the other the spacing of the carinae on the epinotum. In the ♀♀ of the greater number of our species, the clypeus has a median carina which ends on the anterior margin in a more or less sharp point or tooth, and on each side of the latter there is another tooth. These lateral teeth are undoubtedly subjected to variation in the degree of acuteness and of length so that they should not be used for distinguishing closely allied species. Similarly, the distance between the carinae on the epinotal dorsum is not invariable. Incidentally, it may be remarked that the spacing of the carinae often differs in the two sexes. The venation, with the exception of the case of *A. sibirica*, is quite worthless as a specific character. Not only do the relative proportions of the abscissae of the radius differ at times within the species, but even the

number of cubital cells is not constant. *A. assimilis* Kohl has three cubital cells, but by obliteration of the first transverse cubital vein it may sometimes have only two. A similar condition has been observed by myself in two other species. In the B.M. coll. there is a *sibirica* ♂ which has only two cubital cells, and in a ♂ of *apicalis* in Dr Brauns's collection the left wing has only one cubital cell, owing to the suppression of both the first and second transverse cubital veins. In other species normally with three cubital cells specimens are not uncommon in which the upper half or more of the first transverse cubital vein is obsolete. Nevertheless, I regret that in regard to two species, one of which is unknown to me in nature, I have been obliged to fall back on the venation in drawing up a key to the species. A character of some value is the shape of the postocular region of the head. The degree of curvature of the sides of this part and its length vary in the different species, and the easiest way to express this is to give the ratio between the length in the middle to the width, the latter being measured along a line tangential to the posterior margin of the eyes. In making such comparisons it is essential that the insects should be orientated so that they are all viewed at the same angle. The drawings in Plate VIII have been made in this way, the heads of the insects having been so placed that the lower half of the face is vertical and the ocellar area horizontal, or nearly so. In the following descriptions the measurements of the epinotal dorsum are given as follows: the length is measured from the base to the middle of the apical margin and the width is taken across the middle point of the length. In regard to the pronotal collar the measurements include only the actual collar and not the lower parts, which in Plate VIII, fig. 1 are shaded. In the text-figures the various parts are not all drawn to the same scale, the clypeus, tarsi and epinotal dorsum being in most cases more highly magnified than the others.

In the following pages the descriptions of the species described by Kohl are made up of extracts from his key to the species, the diagnoses of the species being embodied in the key and distributed over several paragraphs; in consequence, a certain amount of repetition has been found unavoidable.

The original descriptions of *cyaneipes* Westw. and *venusta* Stal. are so insufficient that it has not seemed worth while to reproduce them in these pages. The following species, with which I am insufficiently acquainted, or are known to me only from descriptions, have been omitted from the key to the species: *cyclostoma* Grib., *crassicornis* Kohl, *purpurea* Westw., *striolata* Sauss., and *chalybea* Smith.

#### KEY TO THE SPECIES OF *AMPULEX* ♀♀

- (20) 1. Pronotal collar without a conical tubercle behind.
- (3) 2. Pronotal collar with two little teeth at about the middle; body black, without any metallic lustre. (Forewing with two cubital cells.)  
*denticollis* Cameron
- (2) 3. Pronotal collar unarmed; body with at least some metallic lustre (blue, green or purple).
- (5) 4. Clypeus produced into a long, narrow and nasiform process; back of the head, pronotal collar, mesonotum and scutellum bright ferruginous and without metallic lustre. (Three cubital cells.) *mutilloides* Kohl
- (4) 5. Clypeus not nasiform; head and thorax without ferruginous colour.
- (7) 6. Clypeus produced into a broad, subquadrangular and transversely convex plate, not carinate longitudinally in the middle and without a median tooth on the anterior margin; fundamental sculpture on the head and pro-mesonotum exceedingly fine, consisting of a microscopic and very close puncturation, so that those parts are dull. Fourth carina of the epinotal dorsum obsolete. (Two cubital cells.) Small species, 8 mm. long.  
*Arnoldi* Brauns

- (6) 7. Clypeus tectiform, strongly carinate lengthwise in the middle, the carina ending on the anterior margin in a distinct tooth.
- (11) 8. Forewing with two cubital cells, exceptionally with three.
- (10) 9. Interocular distance on the vertex nearly equal to the length of the first three joints of the flagellum; the third joint two and a half times longer than its apical width. (11 mm. long.) *apicalis* Smith
- (9) 10. Interocular distance on the vertex slightly less than the length of the second joint of the flagellum; the third joint about four times longer than its apical width. (14.5 mm. long.) *honesta* Kohl
- (8) 11. Forewing with three cubital cells.
- (13) 12. Small species, less than 7 mm. long. *nebulosa* Smith
- (12) 13. Larger species, 13 mm. long or longer.
- (15) 14. Collar of pronotum longer than wide; mesonotum and mesopleurae sparsely punctured. *splendidula* Kohl
- (14) 15. Collar of pronotum wider than long, twice as wide behind as long in the middle.
- (19) 16. Clypeus and scapes black.
- (18) 17. First two tergites sparsely, finely and very shallowly punctured; third carina of the epinotal dorsum at the second third of its course as far from the second carina as from the fourth; second joint of the flagellum a little more than half as long again as the third. *cyanura* Kohl
- (17) 18. First two tergites sparsely, deeply and strongly punctured; third carina of the epinotal dorsum at the second third of its course twice as far from the second carina as from the fourth; second joint of the flagellum one-seventh longer than the third. *cyanura*, race *monticola* Arnold
- (16) 19. Clypeus and scapes ferruginous; second joint of the flagellum one-third longer than the third. *cyanura*, race *rhodesiana* Arnold
- (1) 20. Pronotal collar with a conical tubercle behind.
- (26) 21. All, or at least the middle and hind femora ferruginous.
- (25) 22. Anterior tibiae entirely ferruginous.
- (24) 23. Interocular distance on the vertex hardly greater than the length of the second joint of the flagellum. *Kristenseni* Turner
- (23) 24. Interocular distance on the vertex a little greater than the length of the second joint of the flagellum. *conigera* Kohl
- (22) 25. Anterior tibiae ferruginous below, metallic blue above. *compressa* Fab.
- (21) 26. All the femora metallic blue and green.
- (28) 27. Fourth abscissa of the radius very long, greater than the length of the first or second transverse cubital veins. *sibirica* Fab.
- (27) 28. Fourth or third abscissa of the radius shorter than the first or second transverse cubital veins.
- (32) 29. Interocular distance on the vertex a little more than the length of the second joint of the flagellum.
- (31) 30. Pronotal collar with distinct transverse rugae in the middle; the penultimate joint of hind tarsus extends nearly as far as the second half of the apical joint; clypeus with a tooth on each side of the median tooth. *lazulina* Kohl
- (30) 31. Collar without transverse rugae; penultimate joint of hind tarsus short, barely extending as far as the second third of the apical joint; clypeus with two teeth on each side of the median tooth. *spectabilis* Kohl
- (29) 32. Interocular distance on the vertex as long as, or shorter than the length of the second joint of the flagellum.
- (38) 33. Wings fuscous, without distinctly darker transverse bands.
- (35) 34. Hind tibiae fairly abundantly punctured; interocular distance on the vertex equal to three-quarters of the length of the second joint of the

- flagellum. The median impressed line on the pronotal collar extends back as far as the apex of the conical tubercle. (Three cubital cells present, sometimes only two.) *assimilis* Kohl
- (34) 35. Hind tibiae very sparsely punctured.
- (37) 36. Interocular distance on the vertex only a little less than the length of the second joint of the flagellum. The median impressed line on the pronotal collar does not extend beyond the middle of the segment. (Two cubital cells.) *toroensis* Turner
- (36) 37. Interocular distance on the vertex two-thirds the length of the second joint of the flagellum. (Three cubital cells.) *psilopus* Kohl
- (33) 38. Wings hyaline, with a transverse fuscous cloud beyond the middle, the medial, submedial and anal cells also slightly fuscous. (See fig. 13 b.)
- (40) 39. Face, vertex, temples and mentum with a dense pubescence which obscures the sculpture. *senex* Bischoff
- (39) 40. Pubescence on the head scanty, not obscuring the sculpture.
- (48) 41. Pronotal collar with a clearly defined, longitudinal, impressed line, although sometimes subconcave and depressed in front.
- (45) 42. Head and pro-mesonotum black, with only the slightest trace of metallic lustre.
- (44) 43. Second joint of the flagellum half as long again as the third. *nigro-coerulea* Saussure
- (43) 44. Second joint of the flagellum four-fifths longer than the third. *spiloptera* Cameron
- (42) 45. Head and pro-mesonotum with metallic lustre like the rest of the body.
- (47) 46. Head very minutely and closely punctured, and with a few larger, shallow and scattered punctures. (Interocular distance on the vertex scarcely more than three-quarters of the length of the second joint of the flagellum; hind tibiae very sparsely punctured.) *nitidicollis* Turner
- (46) 47. Head with coarse puncturation; mandibles ferruginous. *Moebii* Kohl
- (41) 48. Pronotal collar with a distinct median longitudinal impressed line.
- (50) 49. Interocular distance on the vertex only a little more than half the length of the second joint of the flagellum. (Two cubital cells.) *dives* Kohl
- (49) 50. Interocular distance on the vertex only a trifle less than the length of the second joint of the flagellum. (Three cubital cells.) *Crawshayi* Turner

KEY TO THE SPECIES OF *AMPULEX* ♂♂

- (12) 1. Pronotal collar without a conical tubercle behind.
- (3) 2. Pronotal collar with two little teeth at about the middle; body black, without metallic lustre. (Two cubital cells.) *denticollis* Cameron
- (2) 3. Pronotal collar unarmed; body with at least some metallic lustre, blue or green or purple.
- (5) 4. Pronotal collar ferruginous. *mutilloides* Kohl
- (4) 5. „ not ferruginous.
- (7) 6. Clypeus without a median carina, but slightly convex transversely; head very wide, the interocular distance on the vertex being equal to the length of the second and third joints of the flagellum. Small species, 5-6 mm. long. (Two cubital cells.) *Arnoldi* Brauns
- (6) 7. Clypeus tectiform, carinate longitudinally in the middle; head not very wide, the interocular distance on the vertex much less than the length of the second and third joints of the flagellum. (Body and legs with abundant exerted pilosity.)
- (9) 8. Pilosity entirely white. *pilipes* Kohl



- (8) 9. Pilosity on the head and dorsum of thorax black.
- (11) 10. Colour purplish black; second joint of the flagellum half as long again as the third. *nebulosa* Smith
- (10) 11. Colour metallic blue and green; second joint of the flagellum one-fourth longer than the third (or one-third longer, *cyanura*, race *rhodesiana* Arnold). *cyanura* Kohl
- (1) 12. Pronotal collar with a conical tubercle behind.
- (16) 13. At least the hind femora ferruginous.
- (15) 14. The anterior tibiae and all the femora ferruginous; interocular distance on the vertex equal to the length of the first and second joints of the flagellum. *Kristenseni* Turner
- (14) 15. Middle and hind femora ferruginous, anterior femora metallic blue above, ferruginous below. Interocular distance on the vertex equal to two-thirds the length of the second joint of the flagellum. *compressa* Fab.
- (13) 16. None of the femora ferruginous.
- (18) 17. The fourth abscissa of the radius long, as long as the first or second transverse cubital veins; the third cubital cell is therefore only half as wide on the radius as on the cubitus. *sibirica* Fab.
- (17) 18. The fourth or third abscissa of the radius shorter than the first or second transverse cubital veins.
- (24) 19. Wings fuscous, without distinctly darker transverse bands.
- (21) 20. Interocular distance on the vertex about equal to the length of the second joint of the flagellum. (Two cubital cells.) *toroensis* Turner
- (20) 21. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus two-thirds of the following joint. (Three cubital cells.)
- (23) 22. Dorsum of epinotum only slightly wider across the middle than long; second sternite black in the middle. *formosa* Kohl
- (22) 23. Dorsum of epinotum considerably wider than long; second sternite metallic blue and green all over. *Dahlbomii* Kohl
- (19) 24. Wings hyaline, with a fuscous cloud beyond the middle, and slightly fuscous near the apex of the medial and submedial cells.
- (28) 25. Interocular distance on the vertex equal to the length of the first two joints of the flagellum, or very nearly. (Three cubital cells.)
- (27) 26. 11 mm. long; apical teeth of the epinotum triangular; second tergite about as long as wide in the middle. *Moebii* Kohl
- (26) 27. 13 mm. long; apical teeth of epinotum curved; second tergite one-fourth wider across the middle than long. *Crawshayi* Turner
- (25) 28. Interocular distance on the vertex a little less than the length of the second joint of the flagellum. (Two cubital cells.) *gratiosa* Kohl

*A. apicalis* Smith (figs. 4 and 4 *a-d*; Plate VIII, figs. 1 and 2). *Ann. Mag. N.H.* XII, p. 292, ♀. 1873.

♀. 11 mm. long. Metallic blue and green, the last three tergites and the apical half of the third, the last four sternites, clypeus, mandibles, scapes and first joint of the antennae, ferruginous. Legs with metallic lustre on the femora and middle and hind tibiae, the rest of the legs black. Apex of the medial cell, the discoidal and second submedial cells of the forewing and the whole of the hindwing hyaline, tinged with brown, the rest of the forewing fuscous. Head including the scapes, thorax and femora with a sparse, coarse and black pilosity. Head closely and coarsely punctured, the punctures wider than the spaces between them, the clypeus smooth. Pronotal collar with a median, longitudinal and deep groove, extending from the brow to the base. Pro-mesothorax with deep and large punctures, elongate and partially confluent, except on the mesopleurae where the puncturation is somewhat less

close. The mesosternum rugulose, sparsely and very shallowly punctured. Dorsum of epinotum very nearly twice as wide as long; the second carina at the base twice as far from the median carina as from the third, the space between the second and third more closely transversely carinate than the rest, the teeth at the apical angles stout and triangular. The declivity and upper part of the sides of the epinotum reticulate-rugose, the lower part of the sides smooth and with a few large punctures posteriorly. Abdomen shining, the first three tergites sparsely and finely punctured, the second sternite shining, microscopically rugulose, sparsely and finely punctured, highest at the middle.

Carina of clypeus acute, ending in a blunt tooth on the anterior margin, with a tooth on each side. Frontal carinae divergent and short, not longer than the scapes. Second joint of the flagellum one-fifth longer than the third, the latter about two and a half times longer than wide at the apex. Eyes moderately convergent above, the interocular distance on the vertex nearly equal to the length of the first three joints of the flagellum. Head not much narrowed behind the eyes, the width of the postocular portion being three times the length. Collar of pronotum one and a half times wider across the middle than long, as long as the mesonotum. Second abdominal segment a little wider than long. Penultimate joint of the hind tarsus half as long as the apical joint. Claws of hind tarsi bifid. Forewing with two cubital cells. (There is a specimen in the Durban Museum which has three.)

♂. 10 mm. long. Colour as in the ♀. Pilosity white, the third and following segments of the abdomen also with a white, exserted pilosity. Puncturation of the head and thorax somewhat closer than in the ♀, on the head more distinctly reticulate and punctate, the punctures on the pro-mesonotum discrete and round. Tergites 1 and 2 strongly punctured, but the punctures are smaller and shallower than those on the mesonotum; tergites 3-6 closely and more finely punctured. Second sternite purplish black and sparsely punctured in the middle, green and more closely punctured at the sides, highest at the basal third. Clypeus sharply tridentate, the distance between the outer teeth about as long as the clypeus measured in the middle. The inner margin of the mandibles with a strong and acute tooth beyond the middle. Second joint of the flagellum very slightly longer than the third. Interocular distance on the vertex equal to the length of the first three joints of the flagellum. Back of the head less convex than in the ♀. Pronotal collar wider and relatively shorter than in the ♀; it is almost twice as wide across the middle as long. Second abdominal segment one-fourth wider than long. Penultimate joint of hind tarsus less than half as long as the apical joint. Otherwise like the ♀.

Durban and Port St John, C.P.

*A. nebulosa* Smith (figs. 5 and 5 a-c; Plate VIII, fig. 3). *Cat. Hym. B.M.* iv, p. 270, ♀. 1856.

*A. cribrata* Kohl. *Ann. K.K.N.H. Mus. Wien*, viii, p. 484, ♂. 1893.

♀. 6.5 mm. long. Metallic blue and purple, the epinotum (in dried specimens at least) metallic green. Mandibles, apex of clypeus, scapes, first joint of the flagellum and apical segment of the abdomen, fusco-ferruginous. Except on the epinotum, first two tergites and tarsi, the whole body, including

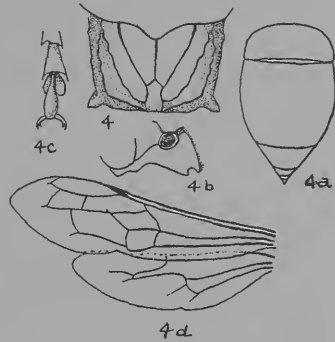


Fig. 4. *Ampulex apicalis*, ♀, epinotum. a. Abdomen. b. Half of clypeus. c. Last three tarsal joints of hind leg. d. Wings.

the metatarsi, has a sparse, long, erect and black pilosity, intermixed with shorter whitish hairs on the temples, sides of thorax and apical half of the abdomen. Metanotum and posterior coxae with a dense, decumbent, silvery pubescence. Clypeus punctulate and dull. Head and pro-mesothorax very deeply and closely punctured, the spaces between narrower than the punctures and raised to form a prominent rugose reticulation. The sculpture is much coarser relatively, considering the difference in size, than in the closely allied *A. apicalis*. The pronotal collar has a median longitudinal groove as in that species. First two tergites and second sternite sparsely punctured, the punctures largest on the first tergite and very shallow on the second segment, separated by spaces which are for the greater part at least three times wider than the largest puncture. Posterior femora and tibiae closely and coarsely punctured. Upper half of metapleurae rugose; lower half of the sides of the epinotum with a few vertical rugae, the upper part with the usual coarse reticulation. Dorsum of epinotum two-thirds wider across the middle than long, briefly narrowed just in front of the apical teeth; the latter are acute and as long as wide at the base. The arrangement of the carinae is the same as in *apicalis*. The carina of the clypeus ends in a sharp tooth, and on each side of the same there is a blunt tooth, beyond which the margin is feebly festooned. Head wide, the interocular distance on the vertex being equal to the length of the second and third joints of the flagellum. Head not much narrowed behind, the postocular region four and a half times wider than long in the middle. Second joint of the flagellum nearly half as long again as the third, the latter three times longer than wide at the apex. Frontal carinae divergent, extending back to about the level of the middle of the eyes. Pronotal collar like that of *apicalis*, but with the brow more widely rounded lengthwise, twice as wide at the base as long. First tergite longer than in *apicalis*, being more than half as long as wide; the second segment as long as wide, the sternite highest a little in front of the middle. Penultimate joint of the hind tarsus half as long as the apical joint, the claws with a small tooth between the apex and the middle, therefore not bifid. Wings hyaline and with a fuscous band like that of *apicalis*, the forewing with three cubital cells; fourth abscissa of the radius two-thirds the length of the second.

♂. 6.5 mm. long. In the only example which I have seen of this sex, the colour is purplish black, the second and following joints of the flagellum dark brown, the femora dark reddish brown, and the wings less deeply infuscated than in the ♀. The sculpture of the head and thorax is the same as in the ♀, but that of the abdomen very different. The first three tergites are strongly and deeply punctured, the puncturation weakest on the third. On the first two the punctures are not much smaller than those on the pronotal collar, and are fairly close together. The abdomen is covered with a sparse and outstanding white pilosity, which is also present on the legs. The second sternite has the lateral margins slightly metallic and as strongly and closely punctured as the tergite, but in the middle it is black, shining and has a few large and shallow punctures. Clypeus sparsely and shallowly punctured, the

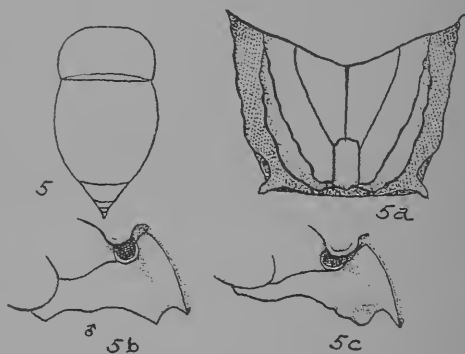


Fig. 5. *Ampulex nebulosa*, ♀, abdomen. a. ♀, epinotum. b. ♂, half of clypeus. c. ♀, half of clypeus.

lateral teeth on the anterior margin acute. Second joint of the flagellum half as long again as the third, the latter three times longer than wide. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus two-thirds of the third joint. The postocular region of the head is wider and less convex than in the ♀, to the same degree as in the ♂ of *apicalis*. The second sternite is highest at the basal fourth, and beyond that point fairly flat. The fourth abscissa of the radius is a little longer than the second. Otherwise like the ♀.

Although Kohl gives the length of his *cribrata* as 11.5 mm., there can be little doubt that his species is the ♂ of *nebulosa*.

Willowmore (Dr H. Brauns); Mossel Bay, March (R. E. Turner).

*A. mutilloides* Kohl (figs. 6 and 6 a; Part v, Plate II, fig. 3; Plate VIII, fig. 4).

*Ann. K.K.N.H. Mus. Wien*, VIII, p. 468, ♀. 1893.

*A. sanguinicollis* Brauns. *Loc. cit.* XIII, p. 394, ♂. 1899.

♀. 15.5–17 mm. long. Vertex and occiput, pronotal collar, mesonotum, scutellum and apical abdominal segment, ferruginous. Mandibles, clypeus, antennae and tarsi brownish black, the front of the head and the temples black, with a bluish tinge. The rest of the body metallic purple and blue. Forewing brownish, except a streak across the middle, which like the hindwing, is flavo-hyaline. Head and thorax with a sparse, erect and black pilosity. Posterior lower angles of the mesopleurae and of the declivity of the epinotum, the middle of the metanotum, coxae and an ovate patch on each side of the second tergite covered with a dense silvery white pubescence. Head strongly and rather irregularly punctured; the punctures smallest on the middle of the face and on the temples, on the face fairly far apart; the sides of the face are closely punctured and somewhat rugose. The vertex and occiput have widely spaced, large and deep punctures, the spaces between them smooth and shining. Pro-mesonotum, scutellum and mesopleurae closely and deeply punctured, the declivity of the epinotum irregularly rugose. First and second abdominal segments with a very few small punctures; otherwise the abdomen is smooth and shining.

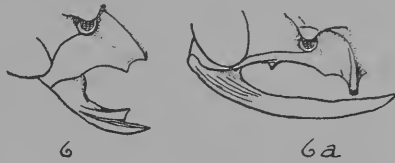


Fig. 6. *Ampulex mutilloides*, ♂, mandible and half of clypeus. a. ♀.

Clypeus produced far forwards in the middle to form a nasiform projection, subcarinate over its basal half, the anterior margin depressed and with an acute tooth on each side about half way between the middle and the lateral angles. Eyes small, the inner margins nearly parallel. Head very wide and short, the interocular distance on the vertex equal to the length of the first four joints of the flagellum plus half of the fifth. The postocular region of the head is three times wider than long in the middle. The posterior ocelli are two and a half times as far from the eyes as they are from each other. Second joint of the flagellum fully half as long again as the third. Pronotal collar short, three times wider at the base than long. Prosterna conically produced posteriorly. Metanotum with a raised semicircular area in the middle which is densely pubescent. Dorsum of epinotum fully twice as wide across the middle as long, the apical teeth fairly small. Second tergite as long as wide across the basal third. Forewing with three cubital cells, the fourth abscissa of the radius about as long as the first.

A more detailed description of this species in this sex is unnecessary, since in colour and in the shape of the head it is quite unlike any other of the genus.

♂. 11 mm. long. Pronotal collar red, with a tinge of purple. Mandibles,

clypeus, antennae and tarsi black, the head and mesothorax metallic purple, the rest blue-green. Wings not so deeply clouded as in the ♀. Second tergite without the lateral patches of pubescence which are present in the ♀. Head, pronotum and mesothorax very strongly punctured, the spaces between the punctures raised and forming a reticulate rugosity. The upper half of the sides of the epinotum with similar sculpture. Tergites 1 and 2 strongly punctured, the punctures elongate and separated by shining spaces which are about twice as wide as the punctures. First sternite transversely rugose, the second sternite black in the middle and with very large shallow punctures, greenish and more closely punctured at the sides. Posterior femora and tibiae strongly and closely punctured on the outer side. The sculpture of the epinotal dorsum resembles that of the ♀, but the fourth carina is less prominent, and the apical teeth are more acute. Mandibles with a sharp tooth a little behind the apex. Clypeus of the usual form. Frontal carinae short and divergent, not reaching the level of the anterior ocellus. Interocular distance on the vertex equal to a little more than the length of the first three joints of the flagellum. The second joint is two-thirds longer than the third. Posterior ocelli not quite twice as far from the eyes as from each other. Postocular region of the head four times wider than long in the middle. The median longitudinal groove on the pronotal collar is much less distinct than in the ♀. Dorsum of the epinotum two-thirds wider across the middle than long. First tergite twice as wide at the apical margin as long in the middle, the second about as long as wide and twice as long as the first.

S. Africa (Drège); Carolina, Transvaal, January (C. H. Bedford); Pretoria; Port Elizabeth (Dr H. Brauns).

*A. cyanura* Kohl (figs. 7, 7 *a-d* and *f*; Plate VIII, fig. 5). *Ann. K.K.N.H. Mus. Wien*, VIII, p. 471, ♀. 1893.

*A. capensis* Cam. *Rec. Albany Mus.* I, p. 254, ♀ (?). 1905.

*A. africana* Cam. *Loc. cit.* p. 256, ♂. 1905.

♀. 13-15.5 mm. long. Antennae, fore tibiae and all the tarsi black, the rest of the body metallic blue and purple, here and there with greenish reflections. Mandibles ferruginous, apical segment and apical margins of the second and following segments, reddish brown. Wings hyaline, faintly tinged with fuscous, the radial, second and third cubital and second discoidal cells darker. Pilosity on the head, thorax and legs black, the posterior inferior angles of the mesopleurae and the sides of the epinotum with a dense silvery pubescence. Head strongly punctured, the punctures behind the ocelli larger and farther apart than in front of them, separated by spaces not much wider than the punctures. On the temples the punctures are smaller than those on the vertex and also wider apart. Pronotum, mesonotum and scutellum with punctures as large as those on the vertex, on the pronotum as dense as on the vertex, but much more sparse on the mesonotum and scutellum. Mesopleurae not closely punctured, the punctures as large as those on the temples. Metapleurae smooth and shining, except the upper corner which is traversed by four oblique carinulae. Declivity and upper part of the sides of the epinotum reticulate-rugose, the lower part of the latter punctured posteriorly. First two tergites and apical half of the third very sparsely, shallowly and finely punctured, the basal half of the third closely and very finely so. Second sternite almost impunctate. Clypeus with a fairly acute tooth on each side of the median tooth. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus two-thirds of the third joint. The second joint is a little more than half as long again as the third; the latter is three times longer than wide at the apex. Frontal carinae divergent, not reaching

back to the level of the anterior ocellus. Head not much narrowed behind, the postocular portion being three and a half times wider than long in the middle. Pronotal collar twice as wide behind as long in the middle, with a distinct median longitudinal groove.

Dorsum of epinotum nearly twice as wide as long; the median carina is not very distinct, and at about the posterior third of the segment the third carina is as far from the fourth as from the second. The apical teeth are small and acute. Second tergite as long as wide, the first more than half as long as the second and only one and a half times wider across the apical margin than long in the middle. The second sternite is almost vertically truncate at the base, and lengthwise is only feebly convex. Posterior tibiae punctured. The penultimate joint of the hind tarsus is a little longer than half the apical joint. The tooth on the claws is inserted a little beyond the middle. Second and fourth abscissae of the radius subequal, the second cubital cell half as wide again on the cubitus as on the radius.

♂. 9 mm. long. Mandibles piceous, with a fusco-ferruginous band just behind the apex. Lower face and clypeus with a sparse, whitish pubescence. Temples, sternum and apical half of the abdomen with a sparse and white pilosity. On the femora there are a few white hairs intermixed with the black ones. Puncturation of the head and thorax stronger than in the ♀, the metapleurae without the carinulae in the upper angle which are present in the ♀. Tergites strongly and deeply punctured, the largest punctures hardly smaller than those on the middle of the scutellum. The second sternite is black except at the sides, the latter parts fairly

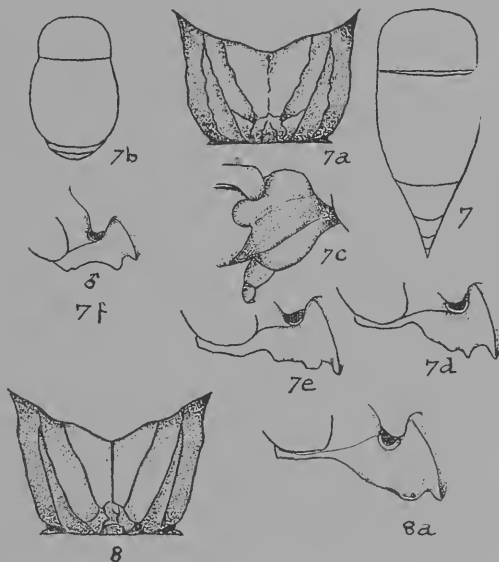


Fig. 7. *Ampulex cyanura*, ♀, abdomen. a. Epinotum. b. ♂, abdomen. c. ♀, pronotum. d. ♀, half of clypeus. f. ♂, half of clypeus. e. Race *rhodesiana*, ♀, half of clypeus.

Fig. 8. *Ampulex cyanura*, race *monticola*, ♀, epinotum. a. Half of clypeus.

closely and not coarsely punctured, the middle sparsely and very coarsely punctured. Lateral teeth of the clypeus less acute than in the ♀. Frontal carinae more strongly developed than in the ♀, divergent except near their ends which slightly converge and fall not far short of the level of the anterior ocellus. Back of the head less convex than in the ♀, the postocular region being nearly four times as wide as long in the middle. Second joint of the flagellum one-fourth longer than the third; the latter three and a half times longer than wide. Second abscissa of the radius one-third longer than the fourth, and not much shorter than the base of the second cubital cell, so that the latter is almost as wide above as below. Otherwise like the ♀.

Eastern Cape Province (Dr H. Brauns).

*A. cyanura*, race *rhodesiana*, n.r. (fig. 7 e).

♀. 11.5–14.5 mm. long. Mandibles, clypeus, scapes and apex of the antennal plate, ferruginous. The rest of the body metallic blue-green. Disc

of the metanotum covered with a dense, white pubescence. Upper third of the mesopleurae and the sides of the epinotum, excepting the anterior fourth, reticulate-rugose. Punctuation of the abdomen stronger than in the type of the species, especially the first tergite. The posterior margin of the head is less convex. Second joint of the flagellum only one-third longer than the third joint. The clypeus differs from that of the type in having the lateral teeth broadly truncated. The apical margin of the second tergite and the apical half of the third are covered with a fine, decumbent and whitish pubescence, and the legs have white hairs intermixed with the black ones. The dorsum of the epinotum is a little broader and the transverse carinulae are much stronger than in the type of the species. The second abscissa of the radius is one-third longer than the fourth. Otherwise like the type of the species.

♂. 7-9 mm. long. Colour like that of the ♀. The joints of the flagellum are thicker than in the ♂ type of the species, the third joint is three times longer than wide, and the second joint is one-third longer than the following joint. The punctuation of the first two tergites is usually much closer and coarser. In the majority of the specimens which I have seen the punctures on the middle of the second tergite are larger and deeper than those on the middle of the scutellum, and are separated by spaces hardly half as wide as the punctures; there are, however, some examples in which the punctuation is hardly coarser than in the type of the species. The second tergite is a little wider than in the type of the species, and the frontal carinae are more clearly defined and extend farther back, that is, to the level of the anterior ocellus.

Bulawayo, Matopos, and Hope Fountain, S.R. Types in R.M. coll. (R.M. and T.M. colls.).

*A. cyanura*, race *monticola* n.r. (figs. 8 and 8 a).

♀. 11.5 mm. long. Head, thorax and legs metallic blue-green, the tarsi and the whole of the antennae black; abdomen metallic green. Mandibles and apical half of the clypeus ferruginous, apical segment of the abdomen fusco-ferruginous. Sculpture considerably coarser than in the type of the species, or in the race *rhodesiana*; on the head and thorax, excepting the scutellum, it is reticulate-punctate, with the spaces between the punctures narrower than the punctures and forming a distinct network. The punctuation of the first two tergites, and to a lesser degree also of the third, is deep and very distinct, and clearly more abundant than in the type of the species or in the race *rhodesiana*. The second sternite is more convex than in the type, and is highest at the middle. The space between the second and third carinae on the epinotum is wider, being about twice as wide at the middle as the space between the third and fourth. Clypeus like that of the race *rhodesiana*, but with the lateral teeth wider and less prominent. Second joint of the flagellum one-seventh longer than the third. Ventral surface of the thorax and abdomen with a sparse, long and white pilosity. Legs with black and white hairs as in the race *rhodesiana*. Otherwise like the type of the species.

Vumbu Mts, 5200 ft., Umtali, S.R. February. 1 ♀. Type in R.M. coll.

*A. denticollis* Cameron (figs. 9, 9 a and b; Plate VIII, fig. 6). *Ann. Trans. Mus.* 11, p. 141, ♂. 1910.

♀. 8 mm. long. Black. Tibiae, tarsi, mandibles, clypeus and apical segments of the abdomen, ferruginous. Coxae and femora fusco-ferruginous. Occasionally the legs are entirely ferruginous. Fore wings pale fuscous, with a band across the middle and also the apical margin broadly clear hyaline.

Hind wings hyaline. Antennae ferruginous or fusco-ferruginous over the four basal joints, thence becoming gradually darker or blackish towards the apex. Posterior lower angle of the metapleurae, declivity of the epinotum and posterior coxae with a fine, dense and whitish pubescence, the mesonotum and scutellum with a few bristles, and the posterior tibiae with one or two white and exserted hairs. Sides of pronotum, middle of the metanotum, mesopleurae and sternum with a microscopic, depressed and grey pubescence; otherwise the insect is glabrous. Head and pro-mesothorax dull; the head is microscopically rugulose and punctulate, the clypeus almost smooth and slightly shining. Pro-mesothorax microscopically coriaceous, sparsely punctured with large and widely separated punctures, which on the mesonotum are most plentiful on the lateral margins. Scutellum closely and finely punctured. Pronotal collar with two small teeth at about the middle. Dorsum of epinotum closely and transversely rugose between the longitudinal carinae, the declivity and upper part of the sides reticulate-rugose, the rest of the sides smooth and slightly shining. Abdomen dull, microscopically reticulate-punctate.

Median area of the clypeus acutely tridentate on the anterior margin, sharply carinate longitudinally in the middle, the carina ending abruptly just in front of the median tooth. Posterior margin of the clypeus, between the antennal sockets, margined by a narrow and transversely striated groove. Lower face without the antennal plate and frontal carinae which are usually present in the genus. First joint of the flagellum longer than wide, the second joint twice as long as the third, the latter twice as long as its apical width. Vertex wide, the interocular distance there being equal to the length of the first three joints of the flagellum.

Posterior ocelli separated from each other by barely more than the diameter of one ocellus, and separated from the eyes by at least three and a half times that length. The temples are large; viewed from the side they are nearly as wide across the middle as the eyes. Pronotal collar narrow, only a little more than half as wide as the head, nearly as long in the middle as wide at the base, the anterior face short and oblique. Dorsum of epinotum as wide across the middle as long, the apical teeth subacute, curved upwards and as long as they are wide at the base. Petiole as long as the posterior coxae. Second abdominal segment slightly longer than wide in the middle; the apical segments not transversely compressed. Penultimate joint of the hind tarsus less than half as long as the apical joint, the latter about as long as the third. The claws of the hind tarsi are almost bifid, having a small tooth placed obliquely near the apex.

♂. 6-7 mm. long. Legs darker, all the femora and the middle and hind tibiae black, only the apical segment of the abdomen ferruginous, otherwise coloured like the ♀. Puncturation of the pro-mesonotum somewhat stronger than in the ♀. The pronotal collar is distinctly impressed lengthwise medially in front of the two teeth, and the latter are stronger than in the ♀. Abdomen fairly shining in small examples, but dull in the larger ones. Anterior margin of the clypeus convex, merely feebly denticulated on each side of the middle, the median carina less acute than in the ♀, ending on the anterior margin in

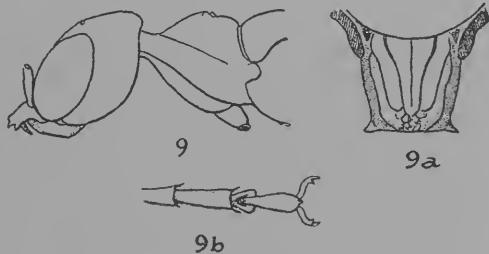


Fig. 9. *Ampulex denticollis*, ♀. a. Epinotum.  
b. Last three tarsal joints of hind leg.



a blunt point. Second joint of the flagellum only half as long again as the third, the latter twice as long as wide at the apex. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum. Second abdominal segment half as wide again as long. Otherwise like the ♀.

Rhodesia, Transvaal, Natal and Cape Province. Fairly common, frequenting Acacia trees in search of its prey. (R.M. and T.M. colls.)

*A. honesta* Kohl. *Ann. K.K.N.H. Mus. Wien*, VIII, p. 465, ♀. 1893.

“♀. 14.5 mm. long. Forewing with only two cubital cells. Hind tibiae metallic green or blue, not red. Episternal suture visible. Collar without a conical protuberance behind.

Collar shaped like that of *A. latifrons* Kohl, almost cuboid, with an impressed median longitudinal line, and covered fairly densely with coarse punctures. Head only moderately narrowed behind; occipital margin sharp but not reflected upwards like a collar. The inner margins of the eyes converge only slightly above, their least distance on the vertex being a little less than the length of the second joint of the flagellum, or equal to the length of the third plus half of the fourth joint. The third joint is about four times as long as wide at the apex. Head very closely and almost microscopically punctured, therefore somewhat dull; it is also fairly densely and coarsely punctured all over, including the temples and occiput. Vertex without an impression behind the ocelli. The frontal carinae are short, and the median carina is faintly indicated. The clypeal carina is straight in its basal half, thence curved to the apex, where it ends in a fairly sharp tooth; on each side of, and at some distance from the latter, there is a lateral tooth. Mesonotum, scutellum, mesopleurae and pronotal collar fairly closely and coarsely punctured. The punctures on the mesopleurae are not quite so large as those on the mesonotum. In addition the mesopleurae have a microscopically fine and close puncturation, which is absent from the mesonotum and scutellum, so that the latter are more shining. Metapleurae punctured posteriorly. Epinotum fairly quadrate; the third carina does not approach the fourth, and their distance apart at about the middle of their course is not much less than the distance between the second and third. The apical teeth are well developed, and below them there is no second tooth. Second abdominal segment a little longer than wide across the middle... Penultimate tarsal joint of the four front legs a little longer than half the apical joint. Claws almost bifid, metallic blue or green. Anterior tibiae not red in front. Wings brown, in the middle and at the apical margin paler, so that they appear broadly banded with brown.”

Gaboon.

*A. splendidula* Kohl. *Loc. cit.* p. 471, ♀.

“♀. Forewings with three cubital cells. Pronotal collar without a conical protuberance behind. Dorsum of epinotum a little wider across the middle than long; the third carina in the middle of its course at least as far from the fourth as from the second. Head not thick, and excepting a few small and some pairs of large punctures, impunctate (the larger ones are regularly spaced and bear macrochaetae; thus there are four arranged at regular intervals in a curve on the vertex, and there is also one on each side very near the margin of the eyes and at the level of the hind ocelli). Temples narrow, rapidly attenuated below. The back of the head is only moderately narrowed posteriorly, and the hind margin is not reflected upwards. The least distance between the eyes on the vertex is equal to about twice the length of the third joint of the flagellum, or to the length of the second plus three-fourths of the following joint. The third joint is not quite three times longer than its apical

width. The frontal carinae are nearly parallel and short, fading out well below the level of the anterior ocellus. A median frontal carina is barely indicated. The carina on the clypeus is feebly arcuate. The lateral teeth on the anterior margin of the clypeus are only moderately developed. The pronotal collar, viewed from above, appears longer than wide in the middle; it has a median longitudinal impression and a few setigerous punctures. The mesonotum also has only a few punctures bearing macrochaetae, and its longitudinal furrows are distinctly curved. The scutellum is bordered by deep pit-like punctures which in front form a clathrate groove. Mesopleurae with few punctures, which are chiefly below the wing-bases. The episternal suture is visible for a short distance. Metapleurae distinctly separated from the sides of the epinotum by a suture, without rugae, sparsely and indistinctly punctured. Dorsum of epinotum not so long as wide across the middle; the apical teeth short and prismatic, below them there is no second tooth. Second abdominal segment as long as wide. The penultimate joint of the hind tarsi is wide, and projects a little beyond the middle of the apical joint. Posterior tibiae slightly punctured behind. The shape of the insect is, on the whole, somewhat compressed. 13 mm. long."

African region.

*A. pilipes* Kohl. *Loc. cit.* p. 484, ♂.

"Forewing with three cubital cells. Pronotal collar at the very most not longer than wide across the posterior third. The dorsum of the epinotum is wider at the middle than long, or as wide. Posterior tibiae punctured. Mesopleurae without a longitudinal suture directed towards the middle coxae. Inner margins of the eyes parallel or nearly so. Pronotal collar without a conical protuberance behind. The second sternite is shining black in the middle, without metallic lustre, sparsely and coarsely punctured. Head very coarsely and densely punctured all over; the punctures are deep and separated by rugae. The clypeal carina ends in an acute tooth, and the anterior margin on each side of it is sinuate. The frontal carinae are at first divergent, then, convergent above. A median carina is absent. Pronotal collar and mesonotum densely, deeply and coarsely punctured. The mesopleurae have an episternal suture, and are coarsely punctured, but not so much so as the mesonotum.

The dorsum of the epinotum is clearly shorter than wide; the third and fourth carinae are not so far apart from each other as 3 is from 2 or 4 from 5. Apical teeth short and acute. Abdomen closely, coarsely and deeply punctured above, and likewise the sides of the second sternite. The second tergite is about as long as wide in the middle, and three and a half times longer than the third. Hind tibiae and outer side of the hind femora closely and fairly coarsely punctured. Petiole fairly short, wide and flat. The whole body and the legs have an abundant and outstanding pilosity. The least distance between the eyes on the vertex is more than the length of the second joint of the flagellum plus one-third of the following joint, but less than the second plus half of the third. The third joint is two and a half times longer than wide in the middle. The distance between the posterior ocelli is about equal to the width of the second joint of the flagellum at its middle. Penultimate joint of the hind tarsi fully half as long as the apical, shorter than the third, which is nearly symmetrical, and as long as, but stouter than the apical joint. 9.5 mm. long."

Guinea.

(At the request of my friend Dr H. Brauns I include herewith on his behalf the following diagnosis of another new species belonging to this section.)

*A. Arnoldi* Brauns (figs. 10 and 10 a-c; Plate VIII, fig. 7).

"♀. 8 mm. long. Bluish black, the thorax purplish black, with hardly any metallic lustre except on the abdomen, which has a little. The femora and tibiae are also bluish black, but sometimes the apices of the femora and the greater part of the tibiae are dark ferruginous. Mandibles, first five joints of the antennae, tarsi and apical segment of the abdomen, ferruginous; the apical margins of the second and following abdominal segments narrowly testaceous. Tegulae black. Fore wings fuscous, the middle and the apical margin clear hyaline like the hindwing. Clypeus, mesopleurae, coxae, middle of the metanotum, apical margins of the second and third tergites with a fine, decumbent and whitish pubescence. In addition there is a decumbent and microscopic pubescence on the head and pro-mesonotum, barely visible with a magnification of less than 40 diameters. The anterior margin of the clypeus has a row of thin whitish cilia, and there are a few macrochaetae on the pro-mesonotum and scutellum. Head and thorax, excluding the dorsum and declivity of the epinotum, dull, microscopically and closely punctate and coriaceous. On the head this sculpture is exceedingly fine and barely resolvable with a magnification of 60 diameters. On this fundamental sculpture is superimposed a sparse and irregular puncturation, which on the head is confined chiefly to the post-ocular region. The punctures are largest on the mesonotum. The scutellum is a little less dull as the fundamental sculpture on that part is not so close; its anterior margin has a transverse and strongly clathrate groove. The sides of the epinotum posteriorly are coarsely punctate and reticulate above, the declivity dull, closely reticulate-rugose. The dorsum of the epinotum is distinctly contracted behind, in front of the apical teeth; it is one-third wider across the middle than long; the first, second and third carinae are well defined but do not extend beyond the second third of the segment, the fourth carina is obsolete. The spaces between the three carinae have transverse carinulae as usual, but the space between the third carina and the lateral margin and also the posterior third of the segment are strongly reticulate-rugose. Apical teeth short and blunt. Abdomen, excluding the second sternite, dull, microscopically alutaceous. The first three tergites also have a sparse, irregular and fine puncturation, the punctures widely separated on the first two, a little closer and finer on the third. Second sternite slightly shining, very finely and closely punctured, especially at the sides. Legs very finely and closely punctured, dull.

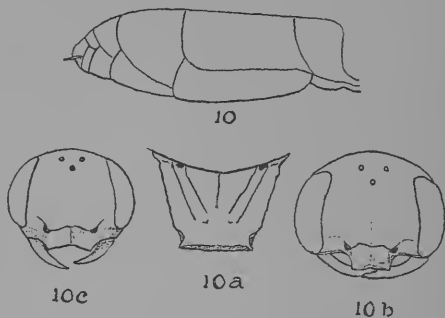


Fig. 10. *Ampulex Arnoldi*, ♀, abdomen.  
a. Epinotum. b. Head. c. ♂, head.

Head very wide, the greatest width across the eyes nearly twice as great as the distance between the anterior ocellus and the anterior margin of the clypeus. The head is not much narrower behind than in front. The clypeus differs in structure from that of all our other species; the median portion is produced into a rectangular, transversely convex plate, about two-thirds wider than long in the middle and not carinate longitudinally. The lateral pieces of the clypeus are very short, almost obsolete. Frontal carinae very short, less than half the length of the scape, widely divergent. Interocular distance on the vertex equal to the length of the first three joints of the flagellum.

Head very wide, the greatest width across the eyes nearly twice as great as the distance between the anterior ocellus and the anterior margin of the clypeus. The head is not much narrower behind than in front. The clypeus differs in structure from that of all our other species; the median portion is produced into a rectangular, transversely convex plate, about two-thirds wider than long in the middle and not carinate longitudinally. The lateral pieces of the clypeus are very short, almost obsolete. Frontal carinae very short, less than half the length of the scape, widely divergent. Interocular distance on the vertex equal to the length of the first three joints of the flagellum.

The posterior ocelli are half as far again from the eyes as they are from each other. Second joint of the flagellum about one-fifth longer than the third, the latter two and a half times longer than wide at the apex. Pronotal collar as long as wide across the middle, fairly flat above, slanting a little downwards in front, with a feeble median longitudinal impressed line which does not reach the posterior margin. Episternal suture present, shallow but distinct. The abdomen is narrow and long, and the dorsal surface of the first two segments is unusually flat. The first is vertically truncate in front, the brow rounded; the second tergite is a little longer than wide across the middle and twice as long as the first, the third tergite is two-thirds the length of the second. Second sternite highest at the apical margin. Femora and tibiae very thick; the penultimate joint of the hind tarsi not half as long as the apical joint, the latter longer than the third. The claws have a tooth inserted a little beyond their middle. Forewing with two cubital cells; the second (true third) transverse cubital vein meets the radius at a distance from the end of the latter which is equal to the distance on the cubitus between the recurrent vein and the first transverse cubital vein.

♂. 5-6 mm. long. Bluish or purplish black, with a slight metallic lustre which is more pronounced than in the ♀. First five joints of the flagellum ferruginous, the rest becoming gradually darker towards the apex, which is brown. Tarsi fusco-ferruginous. Clypeus finely and shallowly punctured; head coarsely reticulate-rugose, the reticulations enclosing large, round and shining pits which, in small specimens, are more or less obliterated in the middle of the face and replaced by an uneven rugulosity. On the temples and the part behind the ocelli the punctures are largest and less closely set, and the intervening spaces are flat. In some specimens the spaces between the larger punctures on the upper half of the face and on the vertex are also closely and finely punctured. Dorsal face of the pronotal collar and the mesonotum very coarsely pitted, almost cribrate, but on the middle of the mesonotum the punctures are farther apart and the spaces between are somewhat shining. Sides of the pronotum obliquely rugulose and dull. Mesopleurae with slightly smaller and less close puncturation than the mesonotum. Metapleurae and sides of the epinotum in front shining and feebly punctured; posteriorly the sides of the epinotum are obliquely rugose and have a few large punctures on the lower margin. The rest of the epinotum sculptured as in the ♀. Tergites dull, irregularly and very coarsely punctured, the spaces between the punctures very finely reticulate-punctate and here and there also rugulose. Second sternite shining, covered with large punctures which are less deep and more evenly spaced than those on the tergite. Head not quite so wide as in the ♀; the anterior margin of the median area of the clypeus is moderately concave, and the lateral angles less rectangular than in the ♀. The lateral pieces of the clypeus are also more developed than in the ♀. Second joint of the flagellum nearly one-fourth longer than the third. Second tergite widest halfway between the middle and the apical margin, a little wider than long, and three-quarters longer than first."

Windsorton, Griqualand. December (Dr H. Brauns). Type in coll. Brauns. This species has also been taken at Bulawayo by Captain Stevenson.

*A. nigrocoerulea* Saussure (figs. 11 and 11 a-d; Plate VIII, figs. 8 and 9).

Distant, *A Naturalist in the Transvaal*, p. 212, ♀. 1892.

♀. 15-18 mm. long. Mandibles, anterior half of the clypeus and the scapes in front, ferruginous; the rest of the head, pro-mesonotum and scutellum black, with a trace of metallic purple here and there. Metapleurae and epinotum metallic blue and purple; the first tergite and greater part of

the second metallic blue, the rest of the abdomen black. Coxae, femora and tibiae black, the coxae with a faint purplish lustre, tarsi dark brown. Fore wing fuscous over the basal half and beyond the middle, the middle and apical margin hyaline like the hind wing. Head, pro-mesonotum and second tergite at the sides and the third tergite with a grey pruinose pubescence. Middle of the metanotum, posterior lower angles of the mesopleurae and sides of the epinotum with patches of dense, white pubescence. Temples, prosternum and declivity of the epinotum with a few long, whitish hairs.

Clypeus smooth, not quite dull. The rest of the head is dull and has a fundamental, microscopically alutaceous sculpture, on which is superimposed a sparse and irregular puncturation; the punctures are not very large and are very scanty behind the ocelli. Lower half of the temples slightly shining, smooth and with a few small punctures. Pronotum nearly smooth and moderately shining, the dorsum with a few large and shallow punctures, and

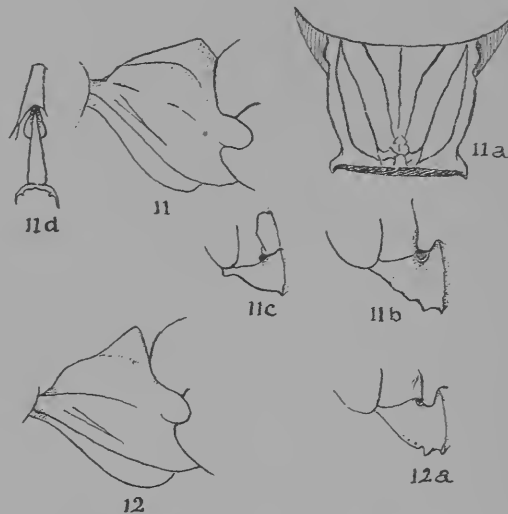


Fig. 11. *Ampulex nigrocoerulea*, ♀, pronotum. a. Epinotum. b. Half of clypeus. c. ♂, half of clypeus. d. ♀, last three tarsal joints of hind leg.

Fig. 12. *Ampulex spiloptera*, ♀, pronotum. a. Half of clypeus.

five or six transverse striae on each side at the middle. The collar is as long as wide at its posterior fourth and raised posteriorly into a blunt cone; it has a feeble impressed line in front and the anterior half of its lateral margins are somewhat tumid. Prosternum and mesothorax shining, sparsely and irregularly punctured, the punctures not large, widely separated except at the anterior angles of the mesonotum. Scutellum shining, with a few large punctures. Episternal suture distinct but shallow. Metapleurae and lower half of the sides of the epinotum smooth and shining. The upper half of the latter widely reticulate-rugose, the declivity closely so and dull. The longitudinal carinae on the dorsum of the epinotum are sharply defined, the intervening spaces closely and transversely carinulate. First two tergites shining, with a sparse, very shallow and fine puncturation. Sternites smooth and shining, the second with a few minute punctures. Clypeus long, the carina acute, sharply bent near the apex and ending in an obtuse point; on each side of the same there is a slightly sharper angle. Interocular distance on the vertex a little less than the length of the second joint of the flagellum. The latter is

very nearly half as long again as the third, which is three and three-quarter times longer than wide at the apex. Frontal carinae parallel and distinct over their anterior half, posteriorly indistinct and curved inwards. A median carina is absent. Head moderately narrowed behind. Posterior ocelli twice as far from the eyes as they are from each other. Dorsum of epinotum one-fifth wider across the middle than long; the third carina at the middle of its course is as far from the second carina as from the fourth. Apical teeth arcuate, compressed, fairly acute and longer than wide at the base. Second abdominal segment a little wider than long, nearly twice as long as the first. Penultimate joint of the hind tarsi distinctly less than half as long as the apical joint. The claws have a broad tooth at the middle. Hind tibiae sparsely and shallowly punctured. Fourth abscissa of the radius slightly shorter than the first.

♂. 12-13 mm. long. Apex of the clypeus, mandibles and front of the scapes, ferruginous. Head and pro-mesothorax dark metallic purplish black, the epinotum and first two tergites metallic blue, the third and following tergites greenish black. Sternites black, the second slightly metallic blue at the sides. Legs black. Fore wings with the fuscous patches much reduced, confined to the apical angle of the submedial cell, and a bar across the radial, second cubital and discoidal cells. The pubescence is longer and more abundant than in the ♀, especially on the third and following tergites. Temples, vertex, pro-mesothorax, sides and declivity of the epinotum, and the tergites with a fine, outstanding and whitish pilosity. Head more strongly and more closely punctured than in the ♀, the lower half strongly reticulate-rugose. The frontal carinae are distinctly defined as far as the anterior ocellus, towards which they converge from the middle onwards. There is a distinct median carina which extends back as far as the anterior ocellus. Pronotal collar sparsely and sharply punctured above and at the sides, the conical tubercle more acute than in the ♀. The puncturation of the mesothorax is more abundant but not coarser than in the ♀. Lower half of the sides of the epinotum sparsely punctured; on the dorsum, the third carina at about the middle of its course is farther from the second than from the fourth. First tergite shining, fairly strongly punctured in the middle, the punctures as large as those on the mesonotum, separated by spaces as wide as the punctures. Second tergite shining, closely and coarsely punctured, the spaces between somewhat raised but hardly rugose. Third tergite dull, finely and closely punctured. Second sternite shining, with a few large punctures. Anterior margin of the clypeus convex on each side, without lateral teeth, the median carina ending in a more distinct tooth than in the ♀. The head is much more narrowed behind than in the ♀, and the occipital margin is reflected to form a collar. Interocular distance on the vertex equal to the length of the second joint of the flagellum. The latter is a little more than one-third longer than the following joint. Second abdominal segment one-fifth wider than long.

S. Rhodesia, Transvaal and Natal. (R.M. and T.M. colls.)

*A. spilopectera* Cameron (figs. 12 and 12 a; Plate VIII, fig. 10). *Rec. Albany Mus.* 1, p. 255, ♀. 1905.

♀. 15-18 mm. long. Very closely allied to *nigrocoerulea*, of which it may be only a subspecies.

The colour differs from that of *nigrocoerulea* in having those parts purple or violaceous which in the other are metallic blue or blue-green. Some specimens from Natal are intermediate, the tergites being as blue as in *nigrocoerulea*. The clypeus is black, only the extreme anterior margin in the middle being fusco-ferruginous. Scares entirely black. Femora and tibiae black, with a violaceous lustre. The apical segment of the abdomen and the

apical margins of the two preceding segments are ferruginous. The fuscous cloud on the fore wing is somewhat darker than in *nigrocoerulea*. The structural differences between this species and *nigrocoerulea* are as follows. Head, excepting the temples and a small area at the sides of the posterior ocelli, strongly and closely punctured; the face rugose between the punctures. Pronotum more strongly punctured, the sides of the collar smooth and very shining, the dorsal face wider, with less parallel sides, the transverse striae deeper, the conical tubercle behind much higher and more acute than in *nigrocoerulea*. Mesonotum and mesopleurae more strongly and a little more closely punctured. The head is more narrowed behind than in the other species, and the apical segments of the abdomen more compressed. Anterior margin of the clypeus with a sharp tooth on each side of the median tooth. The frontal carinae are more clearly defined, and there is a trace of a median carina reaching the anterior ocellus. The interocular distance on the vertex is less than the length of the second joint of the flagellum by as much as the length of the first joint. The second joint of the flagellum is four-fifths longer than the third. Penultimate joint of the hind tarsus less than half the length of the apical joint, but nevertheless a little longer than in *nigrocoerulea*.

♂. 12 mm. long. Varying from metallic purple and blue to green. The differences between the ♂ of this species and that of *nigrocoerulea* are very much the same as in the ♀. The puncturation of the head and thorax is coarser and more abundant, but that of the second tergite is less close than in *nigrocoerulea* ♂. The third joint of the flagellum is shorter than in that species, the second joint being half as long again as the third. There is, however, some variation even in this character. The third carina of epinotal dorsum at the middle of its course is barely farther from the second than from the fourth.

Dunbrody, Willowmore, Addo Bush and Ormiston, C.P.

*A. Moebii* Kohl. *Ann. K.K.N.H. Mus. Wien*, VIII, p. 475, ♀. 1893.

♀. 12-14 mm. long. Mandibles ferruginous, the extreme apex of the clypeus, the underside of the scapes and the apical segment of the abdomen, fusco-ferruginous. Head, thorax, first three tergites and second sternite metallic blue and green, the rest of the abdominal segments excepting the last, black. Legs black, with a slight purple lustre on the femora. Sculpture and pubescence like that of *nigrocoerulea* with which this species is closely allied. The pronotal collar is shaped like that of *nigrocoerulea*, but on the other hand the back of the head is more narrowed than in that species and resembles that of *spiloptera*. The third carina of the epinotal dorsum is slightly nearer to the fourth carina than to the second. The interocular distance on the vertex is equal to the length of the second joint of the flagellum. The latter is three-fifths longer than the third. Clypeus like that of *nigrocoerulea*. The penultimate joint of the hind tarsus is a little less than half the length of the apical joint, but not so short as in *nigrocoerulea*. Otherwise like *nigrocoerulea* ♀.

♂. 11 mm. long. Metallic blue-green. Mandibles ferruginous, clypeus and scapes entirely black. Very much like *nigrocoerulea* ♂ but the puncturation of the head and thorax is much coarser and more abundant. The pronotal collar is a little shorter and transversely striato-punctate on each side in front of the conical tubercle. The lateral margins of the epinotal dorsum are more deeply excised in front of the apical teeth, and therefore appear more prominent than in *nigrocoerulea*. The second joint of the flagellum is one-third longer than the third joint. The inner margins of the eyes are parallel or very nearly so, whereas in *nigrocoerulea* they are moderately but distinctly convergent above. Second abdominal segment not so wide as in *nigrocoerulea*, being only

a trifle wider than long. Penultimate joint of hind tarsus like that of the ♀, less than half the length of the apical joint but longer than in *nigrocoerulea*.

Sunday River and Algoa Bay, C.P. January.

*A. purpurea* Westwood (figs. 13, 13 a and b; Plate VIII, fig. 11). *Arcan. Ent.* II, p. 65, ♀. 1844.

♀. 14 mm. long. Of this species I have seen only one ♀ and one ♂ from Dr Brauns's collection, and one ♀ from the British Mus. coll. Apart from the colour, which is a deep metallic purple, the differences between this species and *Moebii* Kohl appear to me to be very slight. Dr Brauns informs me that this species invariably changes to a purple colour after death, whereas *Moebii* retains its blue and green colour.

Mandibles, apex of the clypeus and underside of the scapes, ferruginous. Tarsi, excepting the first joint, ferruginous below, brown above. The puncturation of the face and vertex is a little less dense than in *Moebii*. Temples sparsely but distinctly punctured. Pronotal collar at the sides and on the posterior half sparsely and not coarsely punctured. Mesothorax a little more strongly and less sparsely punctured than in *Moebii*. The first tergite has a few small and widely spaced punctures. The head is a little wider behind the eyes than in *Moebii*, and the abdomen is broader, the second tergite being only two-thirds longer than the first, whereas in *Moebii* it is twice as long. In both species the second tergite is about as long as wide across the middle. Second joint of the flagellum three-fifths longer than the third, which is a little more than three times longer than its apical width.

The apical teeth of the epinotum are slightly longer and less blunt than in *Moebii*. The penultimate joint of the hind tarsus does not extend quite as far as the middle of the apical joint. The third is longer than in *Moebii*, being nearly two-thirds longer than the fourth, whereas in that species it is only a trifle longer. Pronotal collar with a median longitudinal impression which does not extend as far back as the base of the conical tubercle. Otherwise like *Moebii*.

♂. 12 mm. long. Second joint of the flagellum half as long again as the third. As in the ♀, the apical teeth of the epinotum are more acute than in *Moebii* ♂, and thin, *i.e.* compressed dorso-ventrally, whereas in *Moebii* they are as thick from above to below as from side to side. Tarsal joints as in the ♀. Otherwise like the ♂ of *Moebii*.

Willowmore and Sunday River, C.P.

*A. assimilis* Kohl. *Ann. K.K.N.H. Mus. Wien*, VIII, pp. 463 and 476, ♀. 1893.

"♀. Forewing with two cubital cells, occasionally with three. Hind femora metallic blue or green. Episternal suture visible for a short distance. Pronotal collar at the most only as long as wide at the base, with transverse striae in front and a conical tubercle behind. Back of the head only moderately narrowed, the margin of the occipital foramen not reflected. Epinotal dorsum about as long as wide in the middle, the apical teeth large."

"The penultimate joint of the hind tarsus is less than half as long as the apical, also not half as long as the third joint. Claws armed with a vertical tooth in the middle, and therefore not bifid. Posterior tibiae distinctly but not coarsely punctured. The interocular distance on the vertex is fully two-thirds the length of the second joint of the flagellum. The third joint of the flagellum is about four and a half times as long as its apical width. The

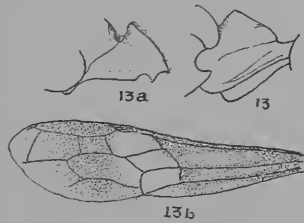


Fig. 13. *Ampulex purpurea*, ♀, pronotum. a. Half of clypeus. b. Forewing.



pronotal collar has a median impressed line which extends back as far as the apex of the conical protuberance. The third and fourth epinotal carinae are nearer to each other than they are to the second and fifth. Head closely and coarsely punctured. The frontal carinae are at first parallel, then curve outwards and further up inwards, forming an arc which closes just behind the anterior ocellus. A median carina is only faintly indicated. The anterior margin of the clypeus lacks a median tooth. The distance between the posterior ocelli is slight, being equal to the width of the antepenultimate joint of the antenna. Inner margins of the eyes moderately convergent above. The pronotal collar, in addition to the transverse rugae, has a coarse puncturation all over. Mesonotum with a moderately dense and coarse puncturation, with smooth, shining spaces between the punctures on the posterior half. Scutellum moderately closely and coarsely punctured. Apical teeth of the epinotum metallic blue and violet. Wings fuscous, without distinct transverse bands. 16-18 mm. long."

Ethiopian region, Guinea.

*A. dives* Kohl. *Loc. cit.* p. 464, ♀.

"♀. Forewing with two cubital cells. Pronotal collar with a conical protuberance behind. The penultimate joint of the hind tarsus is plainly half as long as the apical, and also more than half as long as the third. Claws nearly bifid. Hind tibiae not punctured. Third joint of the flagellum about four times as long as thick. Frontal carinae parallel, short, not reaching the level of the anterior ocellus. There is no median carina on the frons.

Inner margins of the eyes distinctly convergent above; the interocular distance on the vertex is hardly more than half the length of the second joint of the flagellum, but fully as long as the third. Face punctured, without rugae. Vertex moderately punctured. Temples and occiput almost impunctate. The transverse striae on the pronotal collar, which has a median longitudinal impression, are fairly coarse. Prosternum, mesonotum and scutellum with small, scattered punctures. Mesopleurae with a sparse, and relatively not coarse, puncturation. Metapleurae impunctate. Apical teeth of the epinotum not appreciably attenuated. Second abdominal segment a little wider than long. Wings brownish, paler in the middle and at the apical margin. Metallic blue and green. 15.5 mm. long."

Gaboon.

*A. gratiosa* Kohl. *Loc. cit.* p. 484, ♂.

"♂. Pronotal collar with a conical protuberance behind, not longer than wide across the posterior third. Epinotum wider across the middle than long, or as wide as long. Posterior tibiae punctured. Mesopleurae without a longitudinal groove directed towards the middle coxae. Inner margins of the eyes parallel, or nearly so. Forewing with two cubital cells. Median carina of the clypeus straight over its basal half, its apical half bent downwards and ending in a point, the anterior margin on each side of it without excisions. The interocular distance on the vertex is barely equal to the length of the second joint of the flagellum; the third joint is three and a half times longer than wide. Frontal carinae slightly divergent at the base, thence gradually curving inwards and meeting just behind the anterior ocellus. A median carina between them is only faintly indicated. Head closely and coarsely punctured all over, rugose between the punctures, especially on the face. Occipital margin narrow and reflected. Pronotal collar about as long as wide in the middle, rising posteriorly, with a fairly dense and coarse puncturation and a longitudinal median impression which extends back as far as the base

of the conical tubercle; the sides of the collar are also punctured; the tubercle behind is a low one, merging gradually into the surrounding area. Mesonotum and scutellum coarsely and not sparsely punctured; the mesopleurae have a fairly close puncturation which is somewhat finer than that of the mesonotum. Dorsum of epinotum about as long as wide across the middle. The third carina is nearer to the fourth than to the second. The apical teeth are fairly stout. The petiole is relatively long. Second abdominal segment somewhat wider than long, fully three times as long as the third segment, and punctured as in *A. compressiventris* Guérin (= *sibirica* Fab.); at the sides and behind there are some very small punctures intermixed with the larger ones. The second sternite is black in the middle, and its metallic coloured lateral margins are very finely punctured, with here and there a few large punctures. Third to fifth tergites rugulose and moderately coarsely punctured. Posterior tibiae finely punctured; the posterior femora also with a few punctures on the outer face. Penultimate joint of the hind tarsus about half as long as the apical joint, clearly shorter than the third joint. The claws are almost bifid. Metallic green and blue. Wings hyaline, the forewing with two transverse, faintly fuscous bands, one of which covers a part of the radial, second cubital and the end of the second discoidal cells, while the other covers the basal vein and the inner submedial transverse vein. 11.5 mm. long."

Ethiopian region. Guinea.

*A. formosa* Kohl. *Loc. cit.* p. 485, ♂.

"♂. Forewing with three cubital cells. Anterior margin of the clypeus emarginate on each side of the median tooth. The interocular distance on the vertex exceeds the length of the second joint of the flagellum by about two-thirds of the length of the third joint. (Antennae, compared with those of *A. gratiosa*, less elongate.) Third joint of the flagellum two and a half times longer than wide in the middle. Frons with few punctures, and in consequence more rugae are visible. The tubercle on the pronotal collar is fairly acute, standing well out from the surrounding area. Episternal suture present. The penultimate joint of the hind tarsus is barely half as long as the apical joint, distinctly shorter than the third."

(The paragraph above also applies to *A. Dahlbomii* Kohl.)

"Dorsum of epinotum very little wider than long, the apical teeth conical. Middle of the second sternite black. First abdominal segment more campaniform. Petiole relatively thin and fairly long. The frontal carinae in the first part of their course are straight and parallel, then feebly arcuate and meeting behind the anterior ocellus. A median carina between them is barely indicated. Temples, vertex and occiput coarsely and fairly closely punctured. The pronotal collar is coarsely punctured all over, and is only very feebly impressed lengthwise in front. The fairly close puncturation on the mesonotum is coarser than on the pronotum. Mesopleurae moderately closely, coarsely and deeply punctured. Tergites 1 and 2 punctured as in *A. compressa*. The second is somewhat wider than long, about four times as long as the third, which is finely rugose and moderately closely punctured. The sides of the second sternite have a few small punctures mixed with a microscopic puncturation. The black middle portion of the sternite is smooth, shining and sparsely punctured; the highest part of the segment lies at the end of the first third of its length. Posterior tibiae punctured on the inner and outer faces, the punctures distinct but not very large. The posterior femora also have a few punctures. Metallic blue and green. Wings tinged with brown, without transverse bands. 12 mm. long."

Ethiopian region, Senegal.

*A. Dahlbomii* Kohl. *Loc. cit.* pp. 485 and 486, ♂.

(See first paragraph of the description of *A. formosa*, which also applies to this species.)

“♂. Dorsum of epinotum considerably wider than long; the apical teeth more tuberculiform. Second sternite metallic blue all over. The second abdominal segment shaped like that of *A. compressiventris*. Petiole short and thick. Frontal carinae as in *A. formosa*; the median carina slightly indicated. Temples, vertex and occiput very closely and coarsely punctured, with rugae between the punctures. Pronotal collar coarsely punctured, impressed in front, and with a median longitudinal impressed line which extends back as far as the base of the tubercle. Mesonotum coarsely and deeply punctured, especially in front, the punctures moderately abundant. Scutellum with several punctures. Mesopleurae coarsely and fairly closely punctured. Tergites 1 and 2 and sides of second sternite with a fairly plentiful, deep and coarse puncturation. The second sternite in the middle is smooth, shining and sparsely pitted; its highest point is near the base. The second tergite is about as long as wide in the middle, more than four times longer than the fourth, which like the following segment is closely and coarsely punctured. Posterior tibiae punctured on both sides, the punctures not coarse. The posterior femora also have some punctures. Metallic green and blue. Wings strongly tinged with brown, without transverse bands. 13.5 mm. long.”

Ethiopian region.

*A. conigera* Kohl. *Loc. cit.* pp. 473 and 474, ♀.

“♀. The frontal carinae are well developed, parallel at the base, thence curving inwards and meeting just behind the anterior ocellus. Episternal suture distinct. The penultimate joint of the hind tarsus extends to about the middle of the apical joint. The interocular distance on the vertex is more than the length of the second joint of the flagellum, a little less than that of the first and second combined, much more than that of the third. The third joint is about three times longer than wide. Face and vertex closely and very coarsely punctured, with rugae between the punctures. The occiput, near its posterior margin, and the temples have only a few and much smaller punctures, and are shining. Near the base of the mandibles the puncturation becomes denser and larger. Middle carina of the face sharp, although not so prominent as the lateral ones. The carina on the clypeus is for the greater part straight, falling steeply only in front, and ending in a blunt tooth. The lateral teeth are near the median one and are well developed. Pronotal collar impressed in front and with a longitudinal impressed line which does not extend over the conical tubercle behind; it is sparsely punctured all over and has transverse striae in the middle. Mesonotum coarsely but not abundantly punctured, nevertheless more densely so than in *A. compressa*. Scutellum with very few punctures. Mesopleurae coarsely and not closely punctured, the spaces between the punctures, shining. Epinotal dorsum a little wider across the middle than long, almost quadrate. The apical teeth are well developed. The third carina at the middle of its course is not so far away from the fourth as from the second, although the distance is greater than in *A. compressa*. The first abdominal segment is like that of *compressa*, the second is a little wider than long. The second sternite, as in *compressa*, is highest in the anterior third. The tooth on the claws is like that of *compressa*. Middle and hind tibiae very distinctly, and moderately closely punctured behind. Metallic blue and green. All the femora and the anterior tibiae are ferruginous. Wings brownish. 19 mm. long.”

Massana.

*A. compressa* Fab. (figs. 14, 14 a and b). *Mant.* I, p. 275, 1787. *Ent. Syst.* II, p. 206, 1793.

♀. 24 mm. long. Metallic blue and green, the abdomen purple-blue, its last two segments brown. Middle and hind femora bright brick-red, with the extreme apices black. Anterior femora red below, metallic blue above. Middle and hind coxae metallic coppery red above. Tarsi and underside of the tibiae dark brown or blackish. Flagellum black, mandibles fuscous at the base, fusco-ferruginous over the apical third. Thorax and temples with a scanty, whitish pilosity, intermixed with pubescence, but without black bristles. Upper half of the face and the vertex sparsely, finely and shallowly punctured, the space between the frontal carinae almost smooth; the occiput and temples with a few, small and scattered punctures. Pronotal collar transversely rugose above, the sides almost smooth and impunctate. Propleurae with a very fine, shallow and scattered puncturation. Mesonotum sparsely punctured over the anterior half, the punctures fairly small. Scutellum with a few large punctures near the margins. Mesopleurae with a moderately fine and not dense puncturation, the punctures not larger than those on the head. Lower half of the sides of the epinotum and the metapleurae quite smooth and impunctate. First two tergites with very scanty, small and almost obliterated punctures. Hind tibiae smooth, with a row of seven or eight small punctures. Carina of the clypeus bent near the apex, not ending in a tooth. On each side of the middle of the anterior margin there is a small tooth. Eyes convergent above; the interocular distance on the vertex is slightly less than half the length of the second joint of the flagellum. The whole flagellum is long and slender; the second joint is three-fifths longer than the third, and the latter is quite four times longer than wide at the apex. Back of the head short and not narrowed posteriorly. Pronotal collar as long as wide across the middle, the tubercle broad as in *sibirica*, conical only when viewed from the side; the median impressed line is distinct and extends back to the apex of the tubercle. Dorsum of the epinotum about one-fourth wider across the middle than long, the apical teeth triangular, short and blunt; the third carina in the middle is twice as far from the second carina as from the fourth. Second tergite a little wider in the middle than long, nearly three times longer than the first, the last four segments fairly strongly compressed. Penultimate joint of the hind tarsus about half as long as the apical joint, shorter than the third. The claws have a tooth at the middle.

♂. 14-18 mm. long. Face and vertex fairly coarsely punctured and rugose, the space between the frontal carinae obliquely rugose. Temples shallowly, finely and not closely punctured. The frontal carinae are well developed; they diverge as far as the middle, thence converge and meet behind the anterior ocellus; a median carina is not indicated. Clypeus with a sparse and fine puncturation all over. Sides of pronotal collar strongly but not closely punctured, the dorsal surface transversely rugose as in the ♀, and with a median impressed line which reaches the apex of the tubercle. Mesonotum in front, and the scutellum sparsely and moderately coarsely punctured; the sides of the former transversely rugose, the parapsidal sutures narrow and

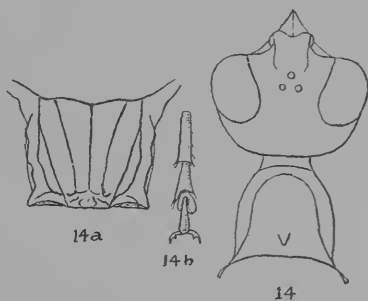


Fig. 14. *Ampulex compressa*, ♀. a. Epinotum. b. Last four tarsal joints of hind leg.

very shallow. Lower half of the sides of the epinotum and the propleurae finely punctured. Mesopleurae fairly closely punctured, the punctures smaller than those on the mesonotum. First and second tergites fairly coarsely punctured, the punctures fairly far apart and not much larger than those on the mesonotum; the remaining tergites closely punctate-rugose. Interocular distance on the vertex equal to two-thirds of the length of the second joint of the flagellum. The latter is half as long again as the third joint, which is five times longer than wide at the apex. Clypeus without lateral teeth on the anterior margin; the latter not emarginate in the middle. Second sternite highest at the first third of its length. Otherwise like the ♀. Oriental and Ethiopian regions. The only examples which I have seen come from Morogoro, Tanganyika Territory.

*A. lazulina* Kohl. *Ann. K.K.N.H. Mus. Wien*, VIII, p. 475, ♀. 1893.

"♀. Middle and hind femora metallic green and blue. The interocular distance on the vertex is equal to more than the length of the second joint of the flagellum by about two-thirds the length of the first joint. Head coarsely punctured. The frontal carinae arcuate, meeting behind the anterior ocellus. Pronotal collar with a median impressed line which extends back only as far as the base of the conical protuberance. Mesonotum and scutellum with not many large punctures. Mesopleurae with an episternal suture, coarsely and not closely punctured, shining between the punctures. Epinotal dorsum almost quadrate, a little wider in the middle than long, the apical teeth stout. The third carina in the middle of its course is nearer to the fourth carina than to the second. Second tergite as long as wide in the middle, or very nearly so. The second sternite is highest in its first third. Metallic blue and green. Forelegs partially reddish brown. Wings brownish, without transverse bands."

(The paragraph above also applies to *A. spectabilis* Kohl.)

"Collar with distinct transverse striae in the middle, here and there with a few punctures. Temples and occiput smooth, with only very sparse puncturation. Apical teeth of the epinotum acute, about as long as wide at the base. Hind tibiae fairly closely punctured. The penultimate joint of the hind tarsus almost reaches the second half of the apical joint. The median carina on the face is distinct as far as the anterior ocellus; the lateral carinae, before curving inwards, are parallel. Clypeal carina straight over the basal two-thirds, thence curved and ending in a blunt tooth. On each side of, and not far from it, there is a well-defined lateral tooth. Labrum not emarginate in the middle. 20-23 mm. long."

Guinea.

*A. spectabilis* Kohl. *Loc. cit.* p. 475, ♀.

(The first paragraph of the preceding description also applies to this species.)

"♀. Pronotal collar without transverse striae in the middle, but with a fairly coarse and sparse puncturation. Temples and occiput coarsely punctured, the punctures neither very close together nor scanty. Apical teeth of epinotum small and blunt. Posterior tibiae smooth, with a few punctures. The penultimate joint of the hind tarsus is quite short, barely extending as far as the second third of the apical joint. The median carina of the face is visible only close to the posterior margin of the clypeus, farther back it is replaced by a deepened and indistinct line. The lateral carinae diverge a little before curving inwards. Clypeal carina straight only at the base, thence curved and ending in a blunt tooth. On each side of the latter there are two teeth. Labrum feebly emarginate. 17-19 mm. long."

Guinea.

*A. psilopus* Kohl. *Loc. cit.* pp. 476 and 477, ♀.

"♀. The interocular distance on the vertex is less than the length of the second joint of the flagellum. The penultimate joint of the hind tarsus is clearly shorter than the third measured along its middle, and distinctly less than half as long as the apical joint. Hind tibiae smooth, with only a few scattered punctures. The impressed median line on the pronotum extends back as far as the base of the conical protuberance. Third joint of the flagellum four times longer than wide at the apex. Propleurae almost smooth, at the most with only a few punctures on the lower margin. The length of the eyes barely exceeds the least distance between them on the vertex. The eyes appear smaller and less convex than in *A. assimilis*. Occiput and temples very sparsely punctured and shining. The frontal carinae are fairly close together, converge slightly above and fall far short of the level of the anterior ocellus. Face and vertex coarsely and fairly closely punctured, but not so closely as in *A. assimilis*. Pronotal collar with sharp transverse striae in the middle, transversely and indistinctly rugose in front, sparsely punctured at the sides. The mesonotum more sparsely and more coarsely punctured. Scutellum shining, almost impunctate. Mesopleurae shining, sparsely punctured, the punctures under the wing bases close together. Petiole relatively long and thin, longer than in *A. compressa*. The second tergite is hardly as long as wide in the middle. The second sternite shaped like that of *assimilis*. The third joint of the hind tarsus is almost symmetrical, barely more produced behind on the inner than on the outer side. Metallic blue. 19 mm. long."

Ethiopian region, Guinea.

*A. crassicornis* Kohl. *Termés. Füzetek*, Budapest, XXI, p. 329, ♂. 1898.

"♂. Green, including the legs. Wings fuscous. Antennae thick. Pronotal collar of the same shape as in *A. compressiventris* Guérin, but the median impressed line does not extend back as far as the conical tubercle. Collar punctured and transversely strigose above. The punctures on the mesothorax and the head are coarse. Dorsum of epinotum barely longer than wide. Abdomen above shaped and punctured like that of *A. compressa*. Second sternite black and moderately flattened behind, its declivity in front convex. First transverse cubital vein sometimes obliterated. Claws armed with a stout and slightly curved tooth. The apical tarsal joint is nearly twice as long as the penultimate joint and is inserted at the base of the latter. 11 mm. long."

Tropical Africa.

*A. sibirica* Fab. (figs. 15, 15 a-d; Plate VIII, fig. 14). *Ent. Syst.* II, p. 207. 1793.

*A. compressiventris* Guérin. *Icon. Règne Anim. Ins.* p. 436, ♀. 1844. R. E.

Turner, *Ann. Mag. N.H.* vol. x, p. 369. 1912. Kohl, *loc. cit.* p. 472, ♀.

♀. 25 mm. long. Metallic blue and green. Mandibles, flagellum excepting the first joint, and last four joints of the tarsi, black. Last two abdominal segments brownish black. Wings fuscous, the veins black. Scapes, lower half of the face, pro-mesothorax, femora and coxae with a few, long, black and outstanding bristles. Clypeus with a fine, grey pubescence and some brownish bristles on the anterior margin. Head fairly smooth and moderately shining, microscopically punctured, and behind the ocelli also aciculate lengthwise. In addition, there are a few large setigerous punctures bordering the inner side of the frontal carinae and on the vertex near the eyes. The sides of the pronotum, the propleurae and mesopleurae have a microscopic fundamental puncturation similar to that on the head. Pronotal collar shining, strongly

and transversely rugose in front, the posterior half with two or three large punctures on each side of the low median tubercle. Mesonotum and scutellum smooth and shining, with a few large setigerous punctures. Mesopleurae and lower half of the sides of the epinotum very sparsely and finely punctured. Metapleurae smooth and shining. Declivity of the epinotum transversely rugose, closely and vertically so in the middle above. Abdomen shining, very sparsely punctured, the punctures small and shallow; the basal halves of the third and following segments and the sides of the second sternite dull, closely and finely punctured. Hind tibiae sparsely and fairly finely punctured. Clypeal carina acute, ending in a blunt tooth on the anterior margin, on each side of which is a large and sharp tooth. Lateral frontal carina short and divergent, the median carina indistinct except just behind the clypeus. Inner margins of the eyes moderately convergent above. Second joint of the flagellum three-fifths longer than the third, the latter about three times longer than wide at the apex. Interocular distance on the vertex equal to the length of the second joint of the flagellum. Head not narrowed behind. Pronotal collar as long as wide at the posterior third, shallowly concave in the anterior half, with a median impressed line which does not reach to the base of the tubercle. The latter is broad and not conical, forming merely the highest point of a ridge in front of the posterior margin. Dorsum of epinotum a little more than one-fourth wider across the middle than long; the third carina is a little nearer to the fourth than to the second, the apical corners are merely angular and without a distinct tooth. The second tergite is as long as wide across the middle, twice as long as the first. The fourth and following segments are strongly, transversely compressed. Second sternite feebly convex lengthwise, highest beyond the middle. Penultimate joint of the hind tarsus long, longer than the asymmetrical third joint measured along its middle, and three-fourths of the length of the apical joint. Claws with a sharp tooth in the middle. Forewing with three cubital cells; the fourth abscissa of the radius unusually long, longer than the second transverse cubital vein.

♂. 14–20 mm. long. Metallic green; mandibles, apical half of the second joint of the flagellum and all the following joints, and last three joints of the tarsi, black. Wings pale fuscous. Clypeus and lower half of the sides of the face smooth and shining. The upper part of the face, the vertex and temples longitudinally and strongly rugose, also strongly punctured between the rugae. The space between the frontal carinae is also longitudinally rugose. The lateral and median frontal carinae are well developed, the former meeting behind the anterior ocellus. Pronotal collar coarsely punctured at the sides and above, excepting the anterior slope of the tubercle; in front of the latter there are two or three strong, transverse striae. There is a deep median sulcus which does not reach the middle of the segment. The tubercle is blunt, oblique in front, vertical behind. Propleurae closely and shallowly punctured. Mesonotum and mesopleurae with large and widely spaced punctures, those on the mesonotum being separated for the greater part by spaces three times as wide as the punctures. The sides of the mesonotum in front of the tegulae

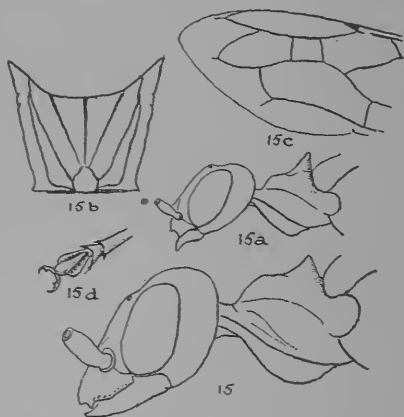


Fig. 15. *Ampulex sibirica*, ♀. a. ♂. b. ♀, epinotum. c. Apex of forewing. d. Last four tarsal joints of hind leg.

have a few transverse rugae, and the parapsidal sutures are very deep and strongly clathrate. The depressions in the posterior corners are also deeper than in most of the other species. Sides of the epinotum shallowly rugosopunctate below. The puncturation on the first two tergites is neither coarse nor dense, and is finer than on the mesopleurae.

The third and following tergites are reticulate-punctate. Second sternite black in the middle and sparsely and very shallowly punctured; the sides are metallic green and have a sparse puncturation which becomes coarser towards the apical margin. Anterior margin of the clypeus widely and arcuately emarginate in the middle, the carina not ending in a tooth. Inner margins of the eyes only slightly convergent above. Interocular distance on the vertex equal to the length of the second joint of the flagellum. The latter is a little more than half as long again as the third joint, which is four times longer than wide at the apex. Postocular region of the head not appreciably narrowed posteriorly. Pronotal collar as long as wide in the middle. Dorsum of epinotum broad, nearly half as wide again across the middle as long; the third carina in the middle of its course is only a little nearer to the fourth than to the second; the apical corners are without distinct teeth, and, as in the ♀, are only angular. Second tergite as long as wide, two and a third times longer than the first. Otherwise like the ♀.

Tropical Africa.

There is a ♂ specimen of this species in the British Museum coll. from Caia, Zambesi (leg. Dr H. Swale), in which the fore wing has only two cubital cells. Otherwise it is identical with the normal form of this species, and provides yet another example of the tendency in the genus to lose the transverse cubital veins.

The name given to this species by Fabricius is misleading, since it does not occur in Siberia, but unfortunately owing to the rules of priority it cannot be suppressed in favour of *compressiventris* Guér.

*A. cyclostoma* Gribodo. *Mem. Accad. Sc. Bologna*, iv, p. 73, ♂. 1894.

"♂. Of moderate size but robust, slightly shining, metallic green and blue, tibiae, tarsi and antennae blue at the base, their apices and the apices of the mandibles black; the whole body covered with a short, sparse and grey pilosity; wings hyaline, the veins testaceous-fuscous, the base and costa darker; head coarsely and closely punctured; clypeus strongly carinate longitudinally in the middle, the apex widely truncate or arcuately emarginate; frontal carinae parallel at the base, thence curving inwards and meeting at the anterior ocellus; antennae fairly short, the second joint of the flagellum almost twice as long as the scape; pronotum, viewed from above, subquadrate, very irregularly punctured, deeply sulcate longitudinally in the middle in front, tumid on each side, raised into a fairly acute conical tubercle behind, the declivous portion in front of the cone shining and impunctate; the mesonotum moderately coarsely punctured. . . . scutellum punctulate; . . . the apical teeth of the epinotum small; abdomen coarsely and fairly closely and evenly punctured; the first segment as wide as the second, which is slightly shining and almost carinulate in the middle; legs relatively short; wings with two cubital cells, tegulae small. 11 mm. long."

Magnarra (Italian Somaliland?).

I have omitted in this translation of the original description several remarks which refer to what are really only generic characters. As to the rest of the diagnosis, it is of so general a nature that it might apply to any one of the group with two cubital cells and a conical tubercle on the pronotum.



*A. melanocera* Cameron. Sjöstedt, *Kilimandjaro-Meru Exped.* VIII, p. 282, ♂. 1910.

"Green with brassy tints, the flagellum of antennae, except at the extreme base, black; the tibiae and basal joint of the tarsi blue, the other tarsal joints black; wings hyaline, tinged with violaceous, the nervures black; the apex of radius largely projecting beyond the posterior part of the second transverse cubital nervure, rounded; there are only two transverse cubital nervures; the recurrent nervures received shortly before the middle of the cellule; middle of front bordered by roundly curved keels which unite immediately behind the ocellus; from near the base of the area thus formed a keel runs from the outer side to shortly beyond the middle; inside this is another and similar keel, commencing shortly behind the middle. Apex of clypeus broadly rounded, not keeled. Mandibles black. Basal half of pronotum strongly transversely striated; a distinct, not very broad, furrow down the centre, the apical part sparsely, distinctly punctured. Mesonotum sparsely punctured, the parapsidal furrows wide, with clearly separated transverse keels; the basal half of the sides strongly, closely punctured. Base of scutellum weakly, the apex somewhat more strongly punctured. Postscutellum opaque, coarsely aciculated, sparsely punctured laterally. Metanotum (*epinotum*) transversely striated, more strongly and widely in the centre than elsewhere; the central keel is straight; those bordering it oblique and united at the apex, forming a triangular area; the apical small area obliquely narrowed at the base and with a keel down the centre; its apex broader and rounded; the lateral teeth broad, the part behind them roundly narrowed; the apical slope has three keels down the centre, the lateral uniting at the apex, the outer side irregularly areolated. Pleurae distinctly, sparsely, but not strongly punctured. Abdomen distinctly, but not very closely nor strongly punctured; the apex more strongly and closely than the rest. Claws with a stout, somewhat triangular tooth behind the middle; the apex of the joints spinose; the third in the centre half the length of the second. ♂. Length 13 mm.

Usambara, Mombo. June.

Occiput broadly, roundly narrowed; apex of vertex slightly depressed, irregularly striated, the striae uniting in front. The posterior tibiae are much more closely and strongly punctured than the others. Penultimate tarsal joint more than half the length of the last. Comes near to *A. assimilis* Kohl."

*A. nitidicollis* Turner. *Ann. Mag. N.H.* vol. IV (9), p. 47, ♀. 1919.

"♀. Viridis; mandibulis, flagello articulis 3-11 secundoque dimidio apicali, tarsisque, articulo basali excepto, nigris; alis fusco-hyalinis, fusco obscure bivittatis. Long. 19 mm.

Clypeus broadly rounded anteriorly, strongly longitudinally carinate in the middle, without lateral teeth. Eyes strongly convergent towards the vertex, where they are separated by a distance scarcely exceeding three-quarters of the length of the second joint of the flagellum. Head not produced behind the eyes and not much narrowed posteriorly, very minutely and closely punctured, with a few larger, but shallow scattered punctures; the two frontal carinae parallel and not nearly reaching the level of the anterior ocellus. Pronotum fully as long as its median breadth, narrowed anteriorly, without striae, with a few scattered punctures, depressed and subconcave anteriorly, raised and subtuberculate in the middle posteriorly, without a distinct median sulcus. Mesonotum and scutellum very sparsely punctured. Median segment nearly as long as its median breadth, strongly transversely striated, the striae closer and finer between the second and third lateral carinae than elsewhere,

the second carina at least half as far again from the median at the base as from the third, the three median carinae not extending to the apex and leaving a well-defined apical area; the teeth at the apical angles of the segment broad and not very long, slightly curved, and not very acute at the apex. Abdomen almost smooth; second tergite fully as long as its greatest breadth, the sides only slightly convex; segments 4-6 rather strongly compressed laterally. Fourth joint of the hind tarsi less than half as long as the fifth and much shorter than the third; hind tibiae very sparsely punctured on the outer side. Fourth abscissa of the radius scarcely half as long as the second transverse cubital nervure; first transverse cubital nervure present, but not quite as strong as the second.

*Hab.* Damba Island, Victoria Nyanza; October 8, 1918 (C. G. Gowdey).

Type in British Museum.

In many points this resembles *A. splendidula* Kohl, but the eyes are much closer together on the vertex than described in that species, the fourth joint of the hind tarsi is shorter, and there are no lateral teeth on the clypeus. The sculpture, however, seems to be very similar."

*A. chalybea* Smith. *Cat. Hymen. Ins. Brit. Mus.* iv, p. 270, ♀. 1856.

"♀. Length 9 lines. Dark blue, variegated with bright purple tints; the mandibles, anterior tibiae in front, and the knees, ferruginous; the antennae and tarsi dark fuscous; the wings fuscous; the head coarsely punctured; the prothorax and sides of the mesothorax with large scattered punctures; the metathorax with a central longitudinal carina and three oblique ones on each side, the spaces between transversely striated; the apical angles produced into a stout sharp angular tooth; the abdomen impunctate.

*Hab.* Africa (Fante)."

This description is entirely inadequate. The insect is figured on plate 7 of the work; the drawing is somewhat diagrammatic but shows that it is a species which has three cubital cells and a pronotal collar without a conical tubercle behind.

*A. striolata* Saussure. Grandidier, *Hist. de Madagasc.* xx, pp. 443 and 446, ♀. 1892.

"Viridi-aurea vel partim cyanescens; formis, coloribus et sculptura *A. compressae* simillima, capite tamen crassiore metanotoque inter carinas haud transverse scalari-carinulato, sed laevigato et in longitudinem arcuato-strigato. ♀. Long. 22 mm.; al. 12 mm.

Head and mesonotum in front strongly punctured. Pronotum flattened and strongly transversely rugose; the tubercle truncate as in *A. compressa*. The epinotum has the same sort of teeth and carinae as in that species, but there is no apical areola; the median carina reaches the apical margin and is very briefly pectinate on each side by rudiments of transverse carinulae. Carinae No. 2 long, but not reaching the posterior margin. The spaces between the median carina and carinae No. 2 are smooth, traversed by one longitudinal ruga which is curved at its base and joins up with the carinae No. 2; there are two or three longitudinal rugae at the end of these spaces. The space between the second and third carinae is occupied by three or four longitudinal rugae which curl round behind and join the third carinae; the former emit along their whole length some very short and curved carinulae. The space between the third and fourth carinae very narrow; that between the fourth and fifth occupied by obliquely transverse carinulae. The second ventral segment is even more convex at the base than in *compressa*. Anterior femora ferruginous in front. Wings as in *A. compressa*, but the third cubital cell has its apical angle rounded and its external margin less straight."

Zanzibar.

*A. senex* Bischoff. *Mitth. Zool. Mus. Berlin*, VII, p. 474, ♀. 1915.

"Of the species known to me this new species is most nearly related to *A. Moebii* Kohl. It also appears to have several points of relationship with *assimilis* Kohl and *melanocera* Cameron. The following description will be limited to pointing out the differences between the new species and *A. Moebii* Kohl. Greenish bronze, the metanotum somewhat blue like the legs; the first two abdominal segments more blackish green, the last two black; hind femora distinctly violaceous; the antennae including the scapes, the clypeus and the mandibles excepting their reddish apices, black. The clouding on the wings is like that of *Moebii*. . . The head is somewhat more elongated and less widely rounded behind. The clypeus is more prominent and a little longer. The strong carina is sharply bent downwards in front and ends in a sharp point on the anterior margin. On each side of this middle tooth there is a stronger tooth which is rounded at the apex. The clypeus has a silvery grey pubescence. Face, vertex, temples and under side of the head with a white pubescence which is so dense that the underlying sculpture cannot be seen. A similar pubescence, which has a rather waxy appearance, is to be seen to a lesser extent on parts of the thorax. . . On the lower half of the face, where the pubescence is absent, the puncturation is decidedly coarse. The frontal carinae are well developed and visible as far as the sharply-defined margin of the silvery grey pubescence. A median keel extends forwards from the anterior ocellus. The antennae are slender compared with those of *Moebii*. The shape of the pronotum is like that of *Moebii*. The tubercle behind is larger and rises more steeply, the lateral margins in front are lower. In the middle of the collar, especially at the sides of the tubercle, there is a distinct transverse striation. On the horizontal part there is a median longitudinal sulcus. On the upper posterior angles of the propleurae there is a distinct and oblique striation. The prosternum appears to have a strong sculpture under the dense pubescence. On the mesonotum, especially on the lateral areas, the puncturation is coarser, and the depressions near the hind margin are deeper and longer. The puncturation of the mesopleurae is much stronger and closer. The scutellum (postscutellum?) has a dense, decumbent and silvery pubescence in the middle, which may very well be present also in fresh specimens of *Moebii*. The shape of the epinotum is very similar, but the apical teeth are less acute though larger. The venation agrees with that of *Moebii*, but the first transverse cubital vein is obliterated. The relative lengths of the tarsal joints and the dentition of the claws is almost identical in the two species. The first and second tergites in the new species have a much more distinct puncturation. The pubescence is very much the same in both species, but in this species it is denser and longer on the coxae, especially on the front pair.

From *assimilis* Kohl and *melanocera* Cameron this species is distinguished at once by the different clouding of the wings.

22 mm. long. 1 ♀. Karissimbi, Ruanda, East Africa."

*A. toroensis* Turner (figs. 16, 16 a-c; Plate VIII, fig. 12). *Ann. Mag. N.H.* vol. IV (9), p. 45, ♀, ♂. 1919.

♀. 20-24 mm. long. Metallic blue and green, with purple reflections here and there. Mandibles, apex of the second joint of the flagellum and all the following joints, and last two joints of the tarsi, black. Both pairs of wings fuscous, the fore wings slightly paler in the middle and at the apical margin. The posterior lower corners of the mesopleurae and epinotum, the coxae and the clypeus with a very fine, whitish and sparse pubescence, the meso-

thorax with a few thin and black bristles, the declivity of the epinotum with a few outstanding, whitish hairs; otherwise glabrous. Face as far as the posterior ocelli with some fairly widely spaced and not large punctures. The vertex more closely punctured, the punctures shallow but larger than those of the face. Temples, occiput and mentum smooth, shining, very sparsely and finely punctured. Pronotal collar and propleurae impunctate, smooth and shining; the collar transversely striated in the middle, about as wide in the middle as long, and produced behind into a high and acute cone. Mesonotum sparsely, the scutellum very sparsely and more finely, punctured; the punctures on the mesonotum hardly larger than those on the vertex. Mesopleurae with very large punctures just under the wing-bases, elsewhere shining and with only a sparse and minute puncturation. Metapleurae, the greater part of the sides of the epinotum and the abdomen smooth and shining, the first two tergites with a few small and scattered punctures. Declivity of epinotum transversely rugose, somewhat reticulate in the middle. Dorsum of epinotum about one-sixth wider across the middle than long; the third carina at the middle of its course nearer to the fourth than to the second, the transverse carinulae sharply defined, the apical teeth strong, acute and subtriangular. Clypeal carina produced into a blunt tooth at the apex, on each side of which is a larger tooth. Head strongly narrowed behind the eyes, the postocular area three times wider than long in the middle. The frontal carinae do not reach the level of the anterior ocellus, from the latter a thin impressed line extends to the posterior margin of the clypeus. Second joint of the flagellum three-quarters longer than the third, the latter not quite three times longer than wide at the apex. Inner margins of the eyes strongly convergent above, the interocular distance on the vertex being equal to only three-quarters of the length of the second joint of the flagellum. Penultimate joint of the hind tarsus as long as the third measured along its middle, and half as long as the apical joint. Hind tibiae sparsely and finely punctured. The first tergite is more than half as long as the second, the latter a little wider than long. Fore wing with two cubital cells, but the base of the first transverse cubital vein is clearly defined.

♂. 13-14 mm. long. Antennae and tarsi black, the scape with a slight greenish lustre. Wings hyaline, slightly tinged with fuscous and with a faint transverse cloud across the radial cell and the cells below it. Face and vertex closely and coarsely punctured, with some rugae between the punctures; the temples and occiput less closely, but quite strongly punctured. Pronotal collar with large, scattered punctures, and strong transverse striae as far as the base of the conical tubercle; the tubercle is more acute and steeper than in the ♀. Propleurae strongly and fairly closely punctured. Mesonotum more strongly punctured than in the ♀. Mesopleurae evenly punctured all over, the punctures nearly as large as those on the mesonotum and separated by spaces which are mostly three times as wide as one of the punctures. First tergite sparsely punctured, the punctures smaller than those of the second tergite, which is more closely punctured. Third and following tergites closely and finely punctured. Second sternite black and shining in the middle, with a few shallow punctures; its sides are metallic green, very finely punctured.

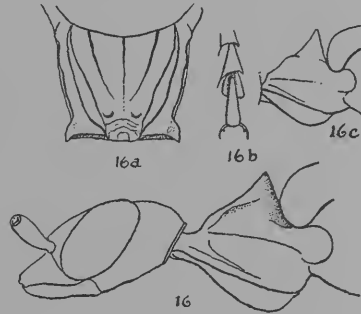


Fig. 16. *Ampulex toroensis*, ♀. a. Epinotum. b. Last three tarsal joints of hind leg. c. ♂, pronotum.

The highest point of the second sternite lies just behind the declivous basal slope. Clypeus without lateral teeth. Frontal carinae sharply defined, meeting behind the anterior ocellus. Second joint of the flagellum half as long again as the third. The interocular distance on the vertex is about equal to the length of the second joint of the flagellum. Third carina of the epinotal dorsum at the middle of its course as far from the fourth carina as from the second. Second tergite about as long as wide. Otherwise like the ♀.

Uganda and Nigeria.

The description given here is based on specimens from Nigeria in the British Museum, and determined by Turner himself. In this ♀ the second joint of the flagellum is not twice as long as the third, as stated by Turner in his description of the type from Uganda.

*A. Crawshayi* Turner (figs. 17, 17 *a* and *b*; Plate VIII, fig. 13). *Trans. Ent. Soc. London*, p. 80, ♀. 1917.

♀. 20–22 mm. long. Metallic green and blue, antennae and tarsi black. Mandibles fusco-ferruginous. Wings hyaline, the veins black; there is a fuscous cloud over the radial, second cubital and discoidal cells, and the medial, submedial and anal cells are also dark. Fore wing with three cubital cells. There is a sparse whitish pilosity on the temples, sides of pronotum, mesothorax, declivity of the epinotum and the coxae. Clypeus and lower half of the sides of the face smooth and shining. The upper half of the face and the vertex coarsely punctured and somewhat rugose between the punctures, the space between the frontal carinae with similar but weaker sculpture. Occiput and temples shining, sparsely and shallowly punctured. Pronotal collar sparsely punctured on the anterior slope, with a few large and scattered punctures elsewhere, the sides and propleurae almost impunctate; the collar has a median sulcus, transversely striated in front, which extends almost as far as the apex of the conical tubercle. Mesonotum and scutellum with only a few small and shallow punctures; the mesopleurae have a coarser and sparse puncturation. Metapleurae and lower half of the sides of the epinotum smooth and shining. Dorsum of epinotum nearly one-fourth wider across the middle than long; the third carina in the middle of its course is twice as far from the second carina as from the fourth, the apical teeth acute and triangular. Abdomen smooth and shining. The second tergite has a few small and shallow punctures at the sides and near the base, and is two and a half times longer than the first tergite and a little longer than wide in the middle. The fourth and following segments are very distinctly compressed. Clypeal carina sharply bent downwards near the apex, ending in a blunt tooth, on each side of which is a larger and sharper tooth. Beyond the lateral teeth the anterior margin has a row of large punctures. Second joint of the flagellum barely one-fourth longer than the third, which is nearly four times longer than wide at the apex. Interocular distance on the vertex a little less than the length of the second joint of the flagellum. Pronotal collar as long as wide in the middle. Hind tibiae with a few small punctures. Penultimate joint of hind tarsus less than half as long as the apical joint, and only a trifle more than half as long as the third joint.

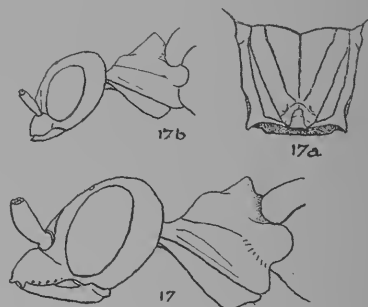


Fig. 17. *Ampulex Crawshayi*, ♀. *a.* ♀, epinotum. *b.* ♂.

(This description is based on a specimen from Lulanguru, East Africa,

in the British Museum coll. (det. Turner), and differs from that author's description in two important particulars. Turner gives the length of the second joint of the flagellum as being about equal to that of the third and fourth combined, and the length of the second tergite as at least one-fourth longer than wide.)

♂. 13 mm. long. Mandibles, labrum, apex of the clypeus and the under side of the scapes, ferruginous. The rugose and punctured sculpture of the face and vertex is relatively stronger than in the ♀. The temples are fairly finely and closely punctured. Pronotal collar sparsely punctured at the sides, more abundantly punctured above than in the ♀. Mesopleurae more strongly punctured than in the ♀. The lower half of the sides of the epinotum finely and sparsely punctured. First two tergites as strongly punctured as the mesopleurae, the sides of the second and following tergites with a whitish and decumbent pubescence. The head behind the eyes is longer and narrower than in the ♀. Clypeal carina not bent near the apex, ending in a sharp point on the anterior margin, which is without lateral teeth. Interocular distance on the vertex equal to the length of the first two joints of the flagellum. The second joint of the flagellum is about one-fourth longer than the third. The conical tubercle on the pronotal collar is more acute than in the ♀, and the area on each side of, and behind it has a fairly dense white and adpressed pubescence. Dorsum of epinotum one-third wider across the middle than long, the third carina almost as far from the fourth carina as from the second. The apical teeth are curved. Second tergite one-fourth wider than long, more than twice as long as the first tergite; second sternite black in the middle, sparsely and coarsely punctured, highest near the base.

Kondowi, Nyasaland; Lulanguru, East Africa; Bulawayo (R. H. Stevenson).

*A. Kristenseni* Turner (figs. 18, 18 a). *Trans. Ent. Soc. London*, p. 81, ♀. 1917.

"♀. Viridi-cyanea; clypeo antennisque nigris; tarsi fuscis; mandibulis, tibiis anticis, femoribusque ferrugineis; alis hyalinis, venis nigris; cellula radiali leviter infuscata. Long. 16 mm."

"♀. Clypeus strongly convex, porrect, the carina not produced into a tooth at the apex. Second joint of the flagellum as long as the third and fourth combined; eyes separated on the vertex by a distance scarcely exceeding the length of the second joint of the flagellum. Head rugosely punctured, the median frontal carina very short, not nearly reaching the anterior ocellus, the lateral frontal carinae well developed. Pronotum shining, feebly and irregularly transversely striated, with a median sulcus on the anterior portion, raised into a tubercle at the apex (base?). Mesonotum in the middle and the scutellum with a few scattered punctures, the sides of the mesonotum more closely punctured. Median segment as in *conigera* Kohl, but with the tubercles at the apical angles much smaller and less curved. Second dorsal segment much broader than long, shorter than in *conigera*; second ventral segment convex at the base as in *conigera*. Fifth joint of the tarsi inserted close to the base of the fourth joint. Three cubital cells, the length of the radius beyond the junction of the third transverse cubital nervure equal to the length of the second transverse cubital nervure."

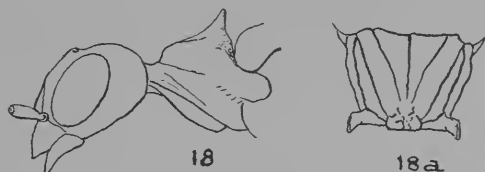


Fig. 18. *Ampulex Kristenseni*, ♂. a. Epinotum.

♂. 12 mm. long. Clypeus metallic green, otherwise coloured like the ♀. Lower half of the sides of the face and the clypeus smooth and shining. The

rest of the face strongly punctured and rugose. The space between the frontal carinae rugose. Temples distinctly rugose longitudinally. The frontal carinae parallel over the basal half, thence curving inwards and meeting behind the anterior ocellus. A median carina extends from the latter to the posterior margin of the clypeus. Pronotal collar deeply and closely, transversely striated across the middle third and on each side of the acutely conical tubercle. Sides of the epinotum obliquely and finely rugose, except near the anterior margin. Puncturation of the tergites similar to that of *A. Crawshayi* ♂. Clypeal carina ending in a sharp tooth on the anterior margin, the latter without lateral teeth. Interocular distance on the vertex equal to the length of the first two joints of the flagellum. The second joint of the flagellum is half as long again as the third. The ocellar area is distinctly raised, so that the space just behind it appears a little excavated. The median sulcus on the pronotal collar does not extend as far as the middle of the segment. Dorsum of epinotum one-fourth wider across the middle than long; the third carina in the middle is nearer to the fourth than to the second; the apical teeth are distinctly large, rostriform and curved upwards. Second tergite a little wider than long, twice as long as the first. Hind tibiae closely punctured. Wings hyaline, faintly tinged with brown, without dark transverse bands. Otherwise like the ♀.

Harar, Abyssinia. Types in British Mus. coll.

## THE SPHEGIDAE OF SOUTH AFRICA

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## PART X

With 3 Plates and 9 text-figures.

## CHLORION Group

GENERAL CHARACTERS. The eyes usually reach the base of the mandibles, but sometimes they are separated from them by short cheeks. Maxillary palpi 6-, labial palpi 4-jointed. Mandibles not excised on the outer margin. Antennae 13-jointed in the ♂, 12-jointed in the ♀. Flagellum filiform. Pronotum as high as the mesonotum, or not much lower; the pronotal tubercles do not extend back as far as the tegulae. Epicnemium absent, the episternal suture usually present. Epinotum large. Abdomen petiolate, the petiole formed only by the sternite of the first segment, or in forms with a 2-jointed petiole, by the sternite and tergite of the first segment. Pygidial area absent. Middle tibiae with two spurs.

Forewing with 3, rarely with 2 cubital cells; the basal vein meets the subcosta at a considerable distance from the stigma. Basal lobe of hindwing very large, extending beyond the submedial cell. This group consists of the following subdivisions:

Group	Subgroups	Genera	Subgenera and species-groups
CHLORION (olim SPHEX)	SCELIPHON Ill. s.l.	SCELIPHON Ill. s.str.	{ CHALYBION Dhlb. HEMICHALYBION Kohl PELOPOEUS Latr.
		PODIUM F. <sup>1</sup> TRIGONOPSIS Perty <sup>1</sup>	
	SPHEX L.	{ SPHEX L. (olim AMMOPHILA Kirby)	{ PARAPSAMMOPHILA Tasch. PSAMMOPHILA Dhlb. SPHEX L. COLOPTERA Lep.
	CHLORION Fab. s.l.	CHLORION Fab.  HARPACTOPUS Smith  ISODONTIA Patt. PROTEROSPHEX Fernald.	{ PSEUDOSPHEX Tasch. <sup>1</sup> CALOSPHEX Kohl <sup>1</sup> PARASPHEX Smith PALMODES Kohl HARPACTOPUS Smith

<sup>1</sup> Not Ethiopian genera.



Genus *SCELIPHRON* Klug.

*Neue Schr. d. Ges. Naturforsch. Freunde*, Berlin, III, pp. 554-66. 1801.

*Pelopoeus* Latr. *Hist. Nat. Crust. et Insect.* III, p. 334. 1802.

*Chalybion* Dhlb. *Hymen. Eur.* I, p. 21. 1843-45.

**CHARACTERS.** Eyes usually moderately convergent above, the inner margins slightly concave. Ocelli round and normal. Third joint of the maxillary palpi dilated below. Joints of the flagellum, excepting the first, elongate, the apical joint not truncate at the end. Tongue short, feebly bilobate at the apex. Clypeus in the ♀ with either 3-5 blunt teeth or lappets, or bilobed in the middle; in the ♂ it is more or less produced in the middle, with the anterior margin bidentate or tridentate. Mandibles sickle-shaped, armed in the ♀ with a tooth behind the apex. Occiput short. Pronotum with a short collar, about as high as the mesonotum, with a more or less deep median longitudinal impression; the sides of the collar are more or less sunken in the middle, the depression being either free and continuous to the front of the collar, or shut off in front by a torus. Mesonotum a little wider than long, sometimes impressed lengthwise in the middle in front. Scutellum subrectangular, sometimes impressed in the middle or bituberculate. Mesopleurae decidedly long, with a distinct episternal suture in front. Metapleurae long, produced rather far backwards, almost as far as the end of the epinotal declivity; in front they are not very clearly delimited from the mesopleurae, and above the middle coxae they have a deep pit. Epinotum long, the dorsum as long as, or longer than wide, sometimes with a dorsal area delimited by a depression bordering the lateral and apical margins; the declivity is as a rule very oblique and fairly long. Petiole cylindrical, long and thin, formed by the first sternite; the rest of the abdomen ovate-globose. Legs long, the femora and tibiae without spines; tarsi without a comb, but with small short spines underneath. Claws of the fore and middle legs always with a tooth, those of the hind legs often unarmed.

Fore wing. Pterostigma small. Three cubital cells, the first much larger than the other two. Both recurrent veins are received by the second cubital cell. The basal vein arises behind the end of the first submedial cell.

Hind wing. Retinaculum unbroken, beginning at the base of the radius. The cubitus arises behind the end of the submedial cell. The basal lobe is very large, folded under and forwards when the wing is at rest, and ends near the anal sinus; a basal sinus is not defined.

Habitat. Temperate and tropical zones of both hemispheres. These wasps build cells of mud, dung, etc., which are attached to the walls of human habitations, or sometimes to the trunks and branches of trees, or to stones. Some species have a partiality for using key-holes and similar cavities. The nest consists of a variable number of cells which are usually enclosed in a common envelope of mud, but in some species the cells may be left uncovered. The prey with which they provision their young consists exclusively of spiders. This genus has been exhaustively monographed by Kohl in the *Ann. K.K.N.H. Mus. Wien*, vol. XXXII, 1918, and the reader should turn to it for further information on the life-history and habits of these insects.

In the following key and descriptions *S. leptogaster* Cameron (*Trans. Phil. Soc. S.A.* p. 227, 1915) has been omitted, since, as Kohl has rightly remarked, it is impossible to determine from the description whether the species belongs to this genus or not.

*S. punctatum* Kohl (*Verh. Zool. Bot. Ges. Wien*, vol. XXXVIII, p. 155, ♀, 1888) has also been omitted, since it appears to be synonymous with *S. inflexum* Sickm., a palaearctic species which may have been accidentally introduced into Zanzibar.

KEY TO THE SPECIES OF *SCELIPHRON*

- A. Body metallic blue. Third cubital cell narrowed on the radius. Clypeus distinctly convex, in the ♀ with three to five small rounded lobes on the anterior margin, in the ♂ with three small teeth. Petiole always more or less curved, and never yellow. Second joint of the flagellum never longer than the third. Claws of the hind legs unarmed, or with a very small tooth. Second cubital cell narrower on the radius than the third, never wider. Dorsum of epinotum without a median longitudinal groove. subgenus *Chalybion* Dahlbom

♀♀

- (8) 1. Metapleurae not sunken, lying in the same plane as the mesopleurae and the sides of the epinotum.  
 (3) 2. Metapleurae distinctly striate as well as punctate. *Schulthessi-Rechbergi* Kohl  
 (2) 3. Metapleurae not striate, only sparsely punctured.  
 (5) 4. Head and thorax black, without metallic lustre. Pilosity reddish brown. Clypeus, first seven joints of the antennae, fore and middle legs and hind tarsi more or less ferruginous. *fuscipenne* Smith  
 (4) 5. Head, thorax and abdomen metallic steel-blue or purple.  
 (7) 6. Mesonotum fairly shining, feebly and very sparsely punctured. Hind tibiae metallic blue. Claws of hind legs without a distinct tooth. Pilosity of the head whitish, rarely blackish brown. Wings dark brown, with a steely blue lustre. *laevigatum* Kohl  
 (6) 7. Mesonotum fairly strongly punctured. Hind tibiae and tarsi, and often also the middle tibiae and tarsi, ferruginous. Claws of hind legs with a distinct tooth. Pilosity of the head and thorax dense and black. Wings dark brown, with a violaceous lustre. *tibiale* Fab.  
 (1) 8. Metapleurae sunken, not lying in the same plane as the mesopleurae and the sides of the epinotum.  
 (10) 9. Petiole long, as long as the first two joints of the hind tarsus. Metapleurae transversely striated. *Gredleri* Kohl  
 (9) 10. Petiole shorter, not longer than the basal joint of the hind tarsus plus half of the second joint. Metapleurae punctured.  
 (12) 11. Dorsum of epinotum fairly flat and long, longer than the mesonotum and scutellum united, very closely and rather finely transversely striate, not punctured between the striae. Metapleurae only very slightly sunken. *Heinii* Kohl  
 (11) 12. Dorsum of epinotum less elongate, almost flat, as long as the mesonotum and scutellum united, transversely and not very closely or finely striate, punctured between the striae. Metapleurae sunken. *bengalense* Dahlbom

♂♂

- (6) 1. Metapleurae not sunken, lying in the same plane as the mesopleurae and the sides of the epinotum; they are punctured and without striae. Second joint of the flagellum shorter than the third. (Sternites 4 and 5, or 3, 4 and 5 covered with a fine decumbent pile.)  
 (3) 2. Head and thorax black, without metallic lustre. Clypeus more or less, mandibles, first seven joints of the antennae, fore and middle legs, and the tarsi, ferruginous. *fuscipenne* Smith  
 (2) 3. Head, thorax and abdomen metallic blue, blue-green or purple.  
 (5) 4. Mesonotum shining, very shallowly, sparsely and finely punctured. Hind tibiae metallic blue. Pilosity of the head and thorax whitish, rarely black. Dorsum of the epinotum a little longer than the length of the mesonotum and postscutellum united. Interocular distance across the clypeus a little greater than across the vertex. *laevigatum* Kohl

- (4) 5. Mesonotum distinctly and not shallowly punctured. Hind tibiae and tarsi, and often also the middle tibiae and tarsi, ferruginous. Pilosity of the head and thorax thick and black. Dorsum of the epinotum a little shorter than the length of the mesonotum and post-scutellum united. Interocular distance across the clypeus not greater than across the vertex. *tibiale* Fab.
- (1) 6. Metapleurae sunken, not lying in the same plane as the mesopleurae and the sides of the epinotum. (Sternites 4 and 5 with a fine decumbent pile.)
- (8) 7. Dorsum of epinotum closely and rather finely striate transversely, without punctures, a little longer than the mesonotum and scutellum united. (The metapleurae are only slightly sunken.) *Heinii* Kohl
- (7) 8. Dorsum of epinotum transversely striate and punctured between the striae, as long as the mesonotum and scutellum united. *bengalense* Dahlb.
- B. Body black and yellow; the abdomen, and sometimes the thorax, with a metallic blue lustre. Clypeus convex, the anterior margin without lobes or teeth. Second joint of the flagellum about as long as third. Petiole yellow. Legs ringed with yellow as in the subgenus *Pelopoeus*. Third cubital cell not, or only very slightly, narrowed on the radius, the second cubital cell very much narrowed there. Dorsum of epinotum convex, sometimes subcarinate lengthwise in the middle, without a median longitudinal groove. subgenus *Hemichalybion* Kohl

♀♀ and ♂♂

- (2) 1. Head and thorax black, without any trace of metallic lustre; the abdomen black, with a dark purplish lustre which is sometimes absent. The median area of the clypeus is not much produced in front, and the anterior margin is not excised in the middle. *brachystylus* Kohl
- (1) 2. Thorax and abdomen dark metallic blue, the thorax sometimes more or less ferruginous. Median area of the clypeus more produced in front, and with a feeble median excision.
- (4) 3. Thorax more or less ferruginous, sometimes entirely so. *Eckloni* Dahlb., var. *rufopicta* Magretti
- (3) 4. Thorax metallic blue-black.
- (6) 5. Wings clouded with fuscous only on the apical margin. 21-28 mm. long. *Eckloni* Dahlb.
- (5) 6. Wings clouded all over, the apical margin darker. 28-32 mm. long. *Saussurei* Kohl
- C. Body without metallic lustre, mostly black and yellow, seldom brownish or dark ferruginous. Petiole often yellow, straight or curved. Clypeus flat, its produced anterior margin bilobed in the middle. Second joint of the flagellum distinctly longer than the third. With one exception, the claws of the hind legs are toothed like the other claws. Second cubital cell sometimes narrower and sometimes wider on the radius than the third. Dorsum of epinotum with a well-defined, raised median area which is usually longitudinally grooved in the middle. subgenus *Pelopoeus* Latr.

♀♀ and ♂♂

- (2) 1. The anterior outer corners of the posterior coxae, viewed from above, are subrectangular. *spirifex* Linn.
- (1) 2. The external border of the posterior coxae, viewed from above, distinctly rounded from front to back.
- (4) 3. Pilosity brown or reddish brown; the anterior and dorsal faces of the pronotal collar form a continuous curve fig. 4). *fulvohirtum* Arnold
- (3) 4. Pilosity black; the anterior and dorsal faces of the pronotal collar meet subrectangularly. (Fig. 4a). *Quartinae* Grib., and *complex* Kohl

*S. (Chalybion) laevigatum* Kohl (figs. 1, 1 a and b). *Verh. Zool. Bot. Ges. Wien*, xxxvii, p. 155, ♂, ♀. 1888.

*Pelopoeus chalybaeus* Smith (*nec* Van der Linden). *Cat. Hymen. B.M.* iv, p. 229, ♀. 1856.

♀. 20–24 mm. long. Antennae black, sometimes the second and third joints of the flagellum reddish brown; tarsi dark brown, mandibles ferruginous, their apices black; the rest of the body is dark metallic blue or blue-purple. Wings dark brown, with a violaceous lustre. Head and thorax with a fairly abundant, exserted, greyish white pilosity; the petiole at the base with a similar but scanty pilosity. Whole body shining, the face and temples somewhat duller than the other parts. Clypeus convex, subcarinate lengthwise in the middle, sparsely and finely punctured (chiefly at the sides), the anterior margin with five lobes. Face closely rugulose-punctate, the rest of the head finely, very shallowly and very sparsely punctured. Sides of pronotal collar impunctate, the dorsal face of the same, the mesonotum and scutellum very finely, shallowly and sparsely punctured. Sides of the thorax behind the pronotum convex, finely and shallowly punctured, the punctures becoming gradually larger and farther apart towards the posterior end. The metapleurae lie in the same plane as the mesopleurae and the sides of the epinotum and the suture between them and the epinotum is entirely obliterated. Dorsum of epinotum finely and closely punctured and transversely striate between the punctures; it is slightly raised lengthwise in the middle, feebly concave on each side in the posterior half, as long as the mesonotum, scutellum and metanotum combined. The declivity of the epinotum is oblique, strongly striated transversely and punctured. Abdomen with only a microscopic puncturation. Second joint of the flagellum a little shorter than the third. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus half of the third joint. Dorsal face of the pronotal collar deeply impressed in the middle, convex from front to back, shorter than the sloping anterior face, the shoulders rounded. Petiole as long as the first joint of the hind tarsus, shorter than the hind femur, which is not quite one-fourth longer. Second cubital cell always narrower on the radius than the third cubital cell.

♂. 12–18 mm. long. Mandibles without a tooth on the inner margin. Clypeus with three small teeth on the anterior margin. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus two-thirds of the third joint. Fourth and fifth sternites with a microscopic, brownish, adpressed pile. Otherwise like the ♀.

Widely distributed throughout tropical and South Africa.

The *S. cubitaloide* Strand (*Jahrb. Nassau Verh. Naturh.* lxi, p. 47, ♂, 1910) is only a variety of this species with black pilosity, blackish mandibles and a second cubital cell more narrowed above than usual. (R.M. and T.M. colls.)

*S. Sommereni* Turner. *Ann. Mag. N.H.* v, No. 27, p. 267, ♀. 1920.

“♀. Viridi-cyanea; mandibulis basi, scapo, flagello articulis 5 basalibus, tegulis, pedibusque, coxis exceptis, rufo-ferrugineis; alis hyalinis, apice late infumatis, venis ferrugineis; capite thoraceque albo-pilosis.

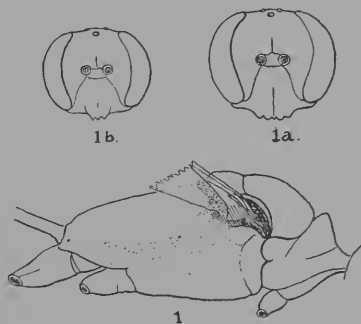


Fig. 1. *Sceliphron laevigatum*, ♀, thorax. a. ♀, head. b. ♂, head.

Long. 17-20 mm.

Clypeus with a row of five small teeth on the apical margin, slightly convex; second and third joints of the flagellum subequal. Mesonotum rather closely punctured, more closely than in *chalybeum* Smith (= *laevigatum* Kohl), and less deeply grooved in the middle than in that species. Otherwise similar to *chalybeum* Smith.

*Hab.* Kabete, near Nairobi, E. Africa (Dr van Sommeren); 3 ♀♀.

Possibly an extreme local variety of *S. chalybeum*, but the very great colour-differences, especially of the legs and wings, and the distinctly closer puncturation of the mesonotum, seem sufficient to merit specific rank. The colour of the basal antennal joints in *chalybeum* appears to be subject to considerable variation."

*S. (Chalybion) Schulthessi-Rechbergi* Kohl. *Ann. K.K.N.H. Mus. Wien*, xxxii, p. 73, ♀. 1918.

"♀. 24.5 mm. long. Dark steel-blue, with black pilosity. Wings dark brown with a blue-violet lustre. Mandibles fusco-ferruginous, the second and third joints of the flagellum of the same colour. Legs metallic blue and black, without red colour. Mandibles with a tooth on the inner margin before the apex. Clypeus well arched, with a median carina, and with five lobes on the anterior margin, the middle one small. The interocular distance on the vertex is nearly equal to the length of the second joint of the flagellum plus two-thirds of the following joint, and is a little less than the distance between the eyes across the clypeus. Second joint of the flagellum four times longer than wide, and about as long as the third. Pronotal collar deeply impressed in the middle. The groove-like depression on the sides of the pronotal collar is open in front, as in the nearest related species (*laevigatum*, *fuscipenne* and *tibiale*), whereas in the other members of the *Chalybion* group it is closed. The mesonotum has a median longitudinal impression, as in the nearest related species. Petiole feebly curved, somewhat longer than the first joint of the hind tarsi, but shorter than the hind tibiae. Sternites without an adpressed pile. The third cubital cell is trapezoidal, and somewhat wider on the radius than the second. The claws of the first two pairs of legs are dentate, but whether this is so with the hind pair cannot be ascertained since the apical tarsal joints are lacking in the type. Clypeus only slightly punctured. Face densely punctured and also slightly rugose, the vertex moderately, the temples and occiput feebly and sparsely punctured. Pronotal collar punctured, the anterior face transversely striate on the lower half. Mesonotum densely punctured, especially at the sides, and with feeble rugae here and there behind. Mesopleurae densely punctured and also striolate. The metapleurae and the sides of the epinotum are distinctly punctured and transversely striate, but the posterior third of the metapleurae is less closely punctured. Declivity of the epinotum strongly, transversely striate. Dorsum of the epinotum feebly swollen lengthwise in the middle, shallowly depressed on each side of the middle, closely and transversely striate all over, and punctured between the striae.

*S. Schulthessi-Rechbergi* differs from all the nearest related species by the much coarser puncturation of the mesonotum, and also by the greater length of the petiole.

Kissantu, Inkissi River, Belgian Congo."

This insect appears to me to be only a variety of *laevigatum* with a stronger puncturation. Apart from that character, the only points in which it differs from *laevigatum* are the very slightly greater interocular width of the vertex and the longer petiole. However, the proportions of those parts are variable within the species, as Kohl himself acknowledges in the introductory chapter in his monograph of the genus.

*S. (Chalybion) Heinii* Kohl. *Denkschr. d. K. Akad. Wiss. Wien*, LXXI, p. 26, ♀, p. 29, ♂. 1906. *Ann. K.K.N.H. Mus. Wien*, xxxii, p. 56, ♀, ♂. 1918.

"♀. 13-16 mm. long. Like *S. bengalense* Dhlb., but smaller and more slender. The blue colour of the body is replaced in parts by violet and is darker than in *bengalense*. Mandibles with a tooth on the inner margin at some distance from the apex. Clypeus of the usual shape, with five lobes or lappets on the anterior margin. Face with silvery white pubescence. The distance between the eyes on the vertex is equal to the length of the second joint of the flagellum plus three-fifths of the following joint; across the clypeus the width is a little greater. Second joint of the flagellum a little shorter than the third. The median impression of the pronotal collar is distinct, and the hollows on the sides are closed in front. The metapleurae are only slightly depressed, in which character this species is transitional to the *tibiale* group. The dorsum of the epinotum is slender and elongate; its length is greater than that of the mesonotum and postscutellum united. It is clearly flattened, more so than in *bengalense* in which the median longitudinal area is still somewhat prominent. Petiole only slightly curved, almost straight, nearly as long as the first joint of the hind tarsus. The sternites have no adpressed pile. The claws of the hind legs are without a tooth. The second cubital cell is narrower on the radius than the third.

The clypeus has a scattered puncturation which is not easily seen on account of the pubescence, but the face is closely and distinctly punctured. Vertex, temples, occiput and pronotal collar with small scattered punctures. Puncturation of the mesonotum distinct but nowhere dense, of the mesopleurae only moderately dense. The metapleurae are smooth and shining and are punctured only on the margins; they are therefore sharply marked off from the mesopleurae and the sides of the epinotum. The dorsum of the epinotum is closely and finely, transversely striate, the declivity coarsely so.

♂. 10-13 mm. long. Smaller and even more slender than the ♀, and agreeing with that sex in the specific characters. Clypeus not arched to quite the same extent as in *bengalense*, the carina not distinct. On the vertex the least distance between the eyes is equal to the length of the second and third joints of the flagellum, but across the clypeus it is a little less. Viewed from the side the contour of the mesothorax below is almost a straight line. Sternites 4 and 5 with a yellowish grey sericeous pubescence."

South Arabia and Erythraea.

*S. (Chalybion) Gredleri* Kohl. *Ann. K.K.N.H. Mus. Wien*, xxxii, p. 67, ♀. 1918.

"♀. 14.5 mm. long. A very graceful and slender wasp, much more so than the smallest examples of *S. bengalense* Dhlb., which it resembles in the tone of the blue colour, and in the white pilosity and pubescence.

Mandibles ferruginous. The second joint of the flagellum is brownish red below, which indicates a variability of colour in the antennae. The clouding of the wings is only slight. Second joint of the flagellum a little shorter than the third. The least distance between the eyes on the vertex is equal to the length of the second and third joints of the flagellum, and a little more than that across the clypeus. The median part of the clypeus is less arched than usual in *Chalybion* species; its anterior margin has three strong, ferruginous teeth in the middle. Pronotal collar depressed in the middle; the depressions on the sides of the collar are hardly closed in front. Scutellum fairly flat. The metapleurae are somewhat depressed and therefore on a lower level than the elongate mesopleurae. The epinotum is long; the dorsum is hardly shorter

than the meso- and metanotum united, and lacks an apical pit. The declivity is not steep, and in profile forms only a blunt angle with the dorsum. The petiole is feebly arcuate, longer than in any other known species of *Chalybion*; it is as long as the first two joints of the hind tarsus. The claws of the hind legs are apparently unarmed. The first and second transverse cubital veins are almost in contact on the radius (perhaps not always so), and therefore the second cubital cell is only half as large as the third. The sternites have no sericeous pubescence. The face is closely punctured, but the vertex, occiput and temples are almost impunctate. Pronotal collar punctured, the anterior face transversely striate. Mesonotum very coarsely and closely punctured, the mesopleurae with somewhat finer and less close puncturation. Epimerum of the metapleurae, above and in front of the depression, almost impunctate and smooth, the rest of the metapleurae with short transverse striae and some punctures. Epinotum above and behind transversely striate, with isolated punctures between the striae. Posteriorly the striae are a little stronger."

Boma Sundi, Lukula River, Belgian Congo.

*S. (Chalybion) bengalense* Dahlbom. *Hymen. Eur.* 1, p. 433, 1845. Kohl, *loc. cit.* p. 55, ♀, ♂.

♀. 13-18 mm. long. Metallic greenish blue, a much paler blue than that of *laevigatum* Kohl. Wings pale brown, paler than in *laevigatum*, the apical margin darker. Tarsi blackish. Mandibles black, with a tooth on the inner margin before the apex. Pilosity white. Face fairly closely and finely punctured at the sides, sparsely and rather coarsely in the middle. Clypeus, vertex and temples sparsely and finely punctured. Mesonotum shining, strongly but not closely punctured, the pronotum with slightly smaller punctures and a few transverse rugae on the anterior face of the collar. Mesopleurae as strongly punctured as the mesonotum but more closely. Metapleurae finely and closely punctured in front, sparsely behind, the punctures large and deep near the posterior margin. Scutellum and postscutellum sparsely and fairly finely punctured, the former only feebly impressed down the middle, much less deeply than in *laevigatum*. Dorsum and declivity of epinotum transversely and closely rugose, punctured between the rugae, the punctures larger and more abundant on the declivity than elsewhere. The clypeus is less convex than in *laevigatum*, but has a distinct median longitudinal carina; there are five lappets on the anterior margin. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus three-fifths of the third joint, and not less than the distance between the eyes across the clypeus. The grooves at the sides of the pronotal collar are not quite closed in front. The dorsal face of the pronotal collar is much less gibbous than in *laevigatum*, and the anterior face is not subvertical as in that species but slopes forwards at a low angle. Metapleurae depressed in front, not lying in the same plane as the mesopleurae. Dorsum of epinotum, measured from the base to the apical fovea, as long as the mesonotum and scutellum united. The basal half is less convex transversely than in *laevigatum*. Petiole feebly arcuate, about as long as the hind tibia. Claws of the hind legs with a very small tooth which is sometimes almost obsolete. Second cubital cell narrower on the radius than the third. Fourth sternite with a band of adpressed blackish pile at the base.

♂. 11-17 mm. long. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus three-fourths of the following joint. Clypeus with three small teeth in the middle of the anterior margin. Mandibles without a tooth on the inner margin. Fourth and fifth sternites with a micro-

scopic, silky, grey pubescence. Otherwise like the ♀. Widely distributed in the Oriental and Australian regions. In the Ethiopian region it has been recorded from Mozambique.

*S. (Chalybion) fuscipenne* Smith. *Cat. Hym. B.M.* iv, p. 229, ♀. 1856.

♀. 17–22 mm. long. Mandibles and anterior half of the median area of the clypeus ferruginous. The rest of the head and all the thorax black, without metallic lustre. Scapes and first five joints of the flagellum bright ferruginous. Legs brownish red, with a faint metallic violaceous lustre. Petiole and abdomen purplish steel-blue. Tegulae brown. Wings dark brown, with a violaceous lustre. The pilosity on the head and thorax is fairly long and moderately abundant, and of a reddish brown colour. The face has a decumbent white pubescence. Abdomen with a pruinose pubescence, not clearly visible except at a certain angle, and absent from the third and following sternites. Anterior half of the clypeus sparsely and finely punctured, and slightly shining, the posterior half a little more closely punctured. Face dull, closely and finely punctured, also with a slight rugulosity here and there. Vertex, occiput and temples slightly shining, sparsely and finely punctured. Sides of pronotal collar shining and impunctate; the anterior and dorsal faces of the collar, the mesonotum and scutellum moderately shining, sparsely and shallowly punctured, the punctures not larger than those on the vertex. Metanotum dull, closely and finely punctured. Meso- and metapleurae shining, more closely and more coarsely punctured than the mesonotum; the punctures are, however, fairly small. Sides of epinotum punctured a little more strongly than the metapleurae; the dorsum shining and transversely striate, the striae obsolete in the middle, which is punctured; the declivity closely and transversely striate, with punctures between the striae. Clypeus convex, with a faint trace of a median longitudinal carina, the anterior margin with five small lappets. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus two-thirds of the following joint, and slightly less than the distance between the eyes across the clypeus. Second and third joints of the flagellum subequal. Pronotal collar impressed in the middle above. The scutellum is shallowly impressed lengthwise in the middle. Epinotum long, nearly as long as the rest of the thorax, the declivity very oblique. Petiole feebly arcuate, a little longer than the first joint of the hind tarsus. Sternites without adpressed pile, the apical sternite sparsely and finely punctured. Claws of the hind legs without a tooth. Second cubital cell narrower on the radius than the third.

♂. 14–18 mm. long. Coloured like the ♀. Clypeus with three small teeth on the apical margin. Mandibles without a tooth on the inner margin. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum, and not less than the distance between the eyes across the clypeus. Fourth and fifth sternites with a brown silky pile. Otherwise like the ♀.

West Africa, from Senegambia to the Gaboon.

*S. (Chalybion) tibiale* Fab. (Plate IX, fig. 2). *Spec. Insect.* i, p. 444, 1781.

♀. 18–23 mm. long. Anterior tarsi, middle and hind tibiae and tarsi, scapes and first five joints of the flagellum, ferruginous; mandibles fusco-ferruginous, darker at the base and apex. The rest of the body is dark steel-blue, with violet reflections. Sometimes the legs are entirely violet-blue. Wings dark brown, with a violaceous and coppery lustre. Pilosity long, abundant and black. Face dull, closely and finely punctured, the clypeus a little more sparsely so. Vertex, occiput and temples sparsely punctured and



slightly shining. Pronotal collar finely punctured; mesonotum finely and not very closely punctured, but more abundantly than in *laevigatum*, and with faint transverse rugae on the posterior third. Scutellum more sparsely punctured than the mesonotum. Mesopleurae and sides of the epinotum moderately shining and fairly closely punctured, the punctures larger than those on the mesonotum. Metapleurae more strongly and much less closely punctured than either the mesopleurae or the sides of the epinotum. Episternal suture distinct. Dorsum of epinotum raised lengthwise in the middle, almost carinulate there, finely and transversely striate, punctured between the striae at the base and at the sides. Declivity transversely rugose and punctured between the rugae. Abdomen smooth and shining, the apical segment with a few shallow punctures. Mandibles with a tooth on the inner margin a little behind the apex. Clypeus convex, subcarinate in the middle, the anterior margin with five lappets. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus two-thirds of the following joint. Pronotal collar impressed in the middle above. Mesonotum impressed lengthwise in the middle anteriorly. The groove at the side of the pronotal collar is not closed in front. Metapleurae on the same level as the mesopleurae and the sides of the epinotum. The dorsum of the epinotum is as long as the mesonotum and postscutellum united; the declivity slopes very little from the level of the dorsum, the junction of the two faces forming a very wide angle. Petiole only very slightly arcuate, as long as the basal joint of the hind tarsus plus half of the second joint. Claws of the hind legs with a tooth. Fourth sternite dull, with a brown adpressed pile.

♂. 14–19 mm. long. Mandibles without a tooth on the inner margin. Antennae entirely black. Puncturation of the head and pro-mesonotum distinctly stronger than in the ♀. Clypeus with three small lobes on the anterior margin. Petiole nearly as long as the basal joint of the hind tarsus. Fourth, fifth and sixth sternites dull, with a greyish pile. Otherwise like the ♀.

Cape Province and Transvaal, not recorded from S. Rhodesia or Natal. (T.M. coll.)

*S. (Hemichalybion) Eckloni* Dahlbom (fig. 2). *Hymen. Eur.* 1, p. 434, 1845.

♀. 20–28 mm. long. Head black, clypeus more or less ferruginous. Mandibles ferruginous, black at the base and apex. Antennae ferruginous, the last five joints black. Thorax and abdomen, excluding the petiole, dark metallic blue. Petiole and most of the hind legs orange yellow, only the coxa, apical thirds of the femur and tibia, and apical half of the basal joint of the tarsus being black; the apical joint of the tarsus brownish. Of the fore legs, the upper face of the femur, the apical third of the same below, the tibia and tarsus are ferruginous, the rest black. The middle coxae, trochanters and femora black, excepting the apex of the latter which, like the tibia, is ferruginous; the tarsus yellow, with the apical joint brownish. Face and clypeus with a sparse greyish yellow pubescence, the clypeus also with some longer outstanding hairs. The pilosity of the rest of the head and of the thorax is black, fairly dense and not long. Abdomen with a microscopic pubescence on the tergites, and a patch of black, adpressed pile on the fourth sternite. Face and clypeus dull, closely and fairly finely punctured, the clypeus with a smooth median longitudinal line. Vertex and temples very shallowly and rather sparsely punctured, the former also feebly aciculate. Mesonotum dull, mesopleurae moderately shining, both closely punctured, the punctures not large. Pronotal collar more shallowly punctured than the mesonotum, the scutellum a little more strongly but less closely so. Metapleurae sunk below the level of the mesopleurae but on the same plane as the sides of the epinotum, shining and

striate-punctate anteriorly, sparsely punctured posteriorly. Epinotum dull, closely and transversely striate and punctured between the striae; the dorsum strongly gibbous and longitudinally carinate in the middle. Mandibles without a tooth on the inner margin. Median area of the clypeus strongly convex, slightly produced in front, the anterior margin with a small excision in the middle. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum (it may, however, amount to as much as the second and third plus three-fourths of the fourth joint). The interocular distance across the clypeus is greater than across the vertex. Pronotal collar deeply impressed in the middle above, the anterior face flat and subvertical. The groove on the sides of the collar is closed in front. Dorsum of epinotum as long as the mesonotum. Petiole almost straight and somewhat variable in length; it is at least as long as the first joint of the hind tarsus plus a third of the second joint, but may be as long as the first and second united. Claws of the hind legs with a sharp tooth at the middle. Wings hyaline, the fore wing infuscated at the apex beyond the cells; the third cubital cell is much wider on the radius than the second.

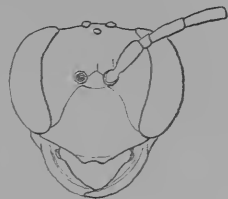


Fig. 2. *Sceliphron Eckloni*, ♀.

♂. 13–22 mm. long. Sternites without adpressed pubescence, but the third to sixth have short, exserted, black hairs. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum, plus three-fifths of the fourth joint. The interocular distance across the clypeus is a little greater. Otherwise like the ♀.

Distributed throughout the Ethiopian region, but not recorded apparently from the Cape Peninsula. A common insect, frequently seen in houses, with an inconvenient partiality for building its mud-nests at the angles of walls, or on furniture, books and boxes.

*S. (Hemichalybion) brachystylus* Kohl. *Verh. Zool. Bot. Ges. Wien*, xxxviii, p. 154, ♀. 1888. *Ann. K.K.N.H. Mus. Wien*, xxxii, p. 83, ♂. 1918.

♀. 20–24 mm. long. Head and thorax black, without any metallic blue lustre. Clypeus black, rarely entirely ferruginous. Scapes and first joint of the flagellum ferruginous. Abdomen black, sometimes with a faint bluish sheen. Legs coloured as in *Eckloni*. Sculpture like that of *Eckloni*. The clypeus is less produced in front, so that the anterior margin is more arcuate than in *Eckloni*, and the median emargination is even shallower. The interocular distance on the vertex is variable, but always less than across the clypeus; it is not less than the length of the second and third joints of the flagellum, but may be as great as the length of the first three joints. The length of the petiole is also variable, but is usually equal to the length of the first joint of the hind tarsus plus half of the second joint.

♂. 12–21 mm. long. Fourth to sixth sternites without exserted black hairs, but with a silky adpressed pile. Otherwise like the ♀.

West, Central and East Africa, Transvaal and Natal. Not recorded from Southern Rhodesia.

*S. (Hemichalybion) Saussurei* Kohl.

*Pelopoeus Spinolae* Sauss. (non Lep.). *Reise der Novara II*, 1 Abt. p. 27, ♀. 1867. Kohl, *Ann. K.K.N.H. Mus. Wien*, xxxii, p. 82. 1918.

“This species differs from *Eckloni* as follows: (1) the shape is much more compressed; (2) the greater size (30–32 mm. ♀; 28 mm. ♂); (3) the deeper infuscation of the wings; (4) and apparently also the somewhat shorter

petiole; this is equal to the basal joint of the hind tarsus or a trifle more. The structural characters and the sculpture are like those of *Eckloni*. The interocular distance, as in that species, is also variable."

Cape Town, 2 ♀♀, 1 ♂, in the Vienna Museum.

*S. (Pelopoeus) spirifex* Linn. (figs. 3 *b* and *c*). *Syst. Nat. Ed. 10 a*, p. 570. 1758.

♀. 20–29 mm. long. Black. Scapes in front dirty yellow, mandibles castaneous. The following parts are bright chrome yellow: fore and middle tibiae, the apices above of the fore and middle femora, the hind trochanters, the basal half of the hind femora, the first two joints of the hind tarsi more or less, and the petiole. Fore and middle tarsi reddish brown. Wings hyaline, the extreme apex of the fore wing feebly clouded; the veins dark brown. Pilosity on the head and thorax black, fairly long and abundant. Face and clypeus with a very fine greyish pubescence. The middle lobes of the clypeus are sometimes fusco-ferruginous. Clypeus finely punctured and dull. Face dull, finely and closely punctured, with a slight rugulosity at the sides. Pronotal collar above and in front dull, shallowly and finely punctured, the sides

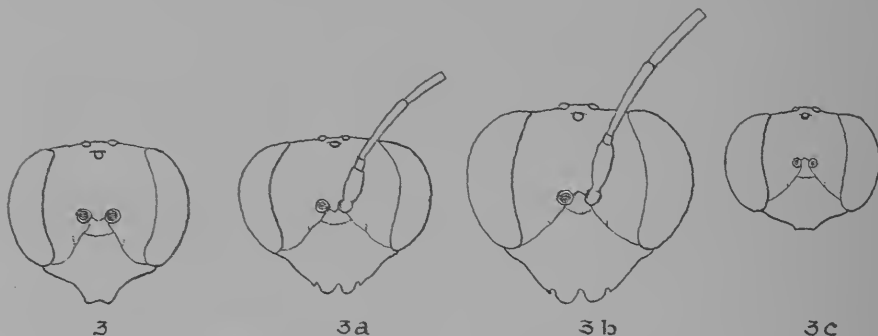


Fig. 3. *Sceliphron Quartinae*, ♂. *a.* ♀. *b.* *Sceliphron spirifex*, ♀. *c.* ♂.

moderately shining and impunctate. Mesonotum dull, closely and more or less transversely rugulose. Mesopleurae and metapleurae shining, finely punctured, the punctures becoming gradually scantier and smaller towards the posterior angle of the metapleurae; the latter are smooth and impunctate in the anterior upper angle. The metapleural pit, just above the middle coxae, is deep and pyriform. Scutellum and postscutellum longitudinally and finely rugose. Dorsum of epinotum with a raised, scutiform median area which is widely and longitudinally grooved in the middle and distinctly defined all round by a narrow marginal groove which is widest and deepest at the apex of the dorsum. The whole epinotum is strongly and closely striate; obliquely so on the sides where the intervening spaces are shining, transversely on the declivity, and obliquely on the dorsum. Apical sternite sparsely and finely punctured; the rest of the abdomen smooth and impunctate, fairly dull and covered with a microscopic, blackish pubescence. Mandibles without a tooth on the inner margin. Anterior margin of the clypeus with two rounded lappets in the middle. Interocular distance on the vertex less than across the clypeus, equal to the length of the second joint of the flagellum. The second joint is one-sixth longer than the third. Pronotal collar very shallowly impressed in the middle above; the grooves at the sides of the collar are not open in front. Dorsum of epinotum as long as the mesonotum. Petiole straight, as long as the hind femur. The coxae of the hind legs, seen from above,

are subangularly dilated outwardly in front. Second cubital cell usually narrower on the radius than the third, rarely as wide.

♂. 15–24 mm. long. Scapes entirely black. Anterior margin of the clypeus convex, shallowly and arcuately emarginate in the middle. The sculpture of the face and pro-mesonotum is stronger than in the ♀; the mesonotum is transversely rugose and punctured between the rugae. The pronotal collar is more deeply impressed in the middle, and the anterior face is more oblique, not subvertical as in the ♀. The distance between the eyes on the vertex is about the same as across the clypeus, and is equal to the length of the second and third joints of the flagellum. The second joint of the latter is relatively a little longer than in the ♀, being somewhat more than one-sixth longer than the third. Petiole as long as the hind tibia plus one-third of the basal joint of the hind tarsus. Third to fifth sternites with a band of dark brown, velvety pile at the base. Otherwise like the ♀.

Very common and widely distributed throughout the Mediterranean sub-region and the Ethiopian region.

*S. (Pelopoeus) Quartinae* Gribodo (figs. 3, 3 a, 4 a). *Ann. Mus. Civ. Stor. Nat. Genova* (2), xxxv, p. 298, ♂, ♀. 1884.

*S. Voeltzkovii* Kohl. *Voeltzkov Reise in Ost-Afr.* II, p. 370, ♀ (race). 1909.

♀. 15–22 mm. long. Colour like that of *spirifex* but the scapes are entirely black, and the black on the apical part of the posterior femora is less extensive, barely extending beyond the apical third. (The race *Voeltzkovii* Kohl has fusco-ferruginous scapes, the apical part of the petiole black, and the anterior and middle tibiae blackish.) Wings hyaline, tinged with yellow, the veins yellowish brown. Pilosity black, shorter and less abundant than in *spirifex*. On the whole, the sculpture is similar to that of *spirifex*, but somewhat stronger on the mesonotum; the puncturation of the mesopleurae is relatively larger, and the striation of the epinotum much finer and a little closer. The striation on the raised area of the epinotal dorsum, except at its extreme base, is almost transverse, not oblique as in *spirifex*, and on the sides of the segment there are fine punctures between the striae which are not present in *spirifex*. Mandibles with a sharp tooth on the inner margin near the apex. Clypeus with the usual two rounded lobes on the anterior margin; it is also feebly carinate in the middle over the basal half. Interocular distance on the vertex less than across the clypeus, and equal to the length of the second joint of the flagellum plus two-thirds or three-fourths of the third joint. The second joint is nearly half as long again as the third. The head is wider than in *spirifex*, the greatest width of the face, measured from the inner margins of the eyes, being equal to the distance between the anterior ocellus and the anterior fourth of the clypeus, whereas in *spirifex* it is equal to the distance between the anterior ocellus and the middle of the clypeus. The posterior ocelli are a little farther from the eyes than they are from each other. The pronotal collar is less deeply impressed in the middle than in *complex* Kohl, but the proportions of the dorsum of the epinotum and the declivity are the same as in that insect. The median longitudinal groove on the epinotal dorsum is narrower and deeper than in *spirifex*, but not so narrow as in *complex*. The petiole is almost straight, and is as long as the posterior femur plus half the length of the trochanter. The posterior coxae are not angularly dilated in front. Claws of

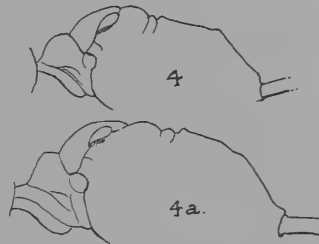


Fig. 4. *Sceliphron fulvohirtum*, ♀, profile of thorax. a. *Sceliphron Quartinae*, ♀, profile of thorax.

the hind legs with a tooth near the middle. Second cubital cell wider on the radius than the third, rarely equally wide.

♂. 12-21 mm. long. Interocular distance on the vertex greater than across the clypeus, nearly equal to the length of the second and third joints of the flagellum. Mandibles edentate on the inner margin. Petiole as long as the posterior femur and trochanter combined. The sculpture is stronger than in the ♀, especially on the epinotal dorsum; the median groove there is wider and deeper than in the ♀, or than in *spirifex* ♂. The anterior margin of the clypeus is produced into a short lobe which has rounded lateral angles, with the margin between them feebly concave. The dorsal face of the pronotal collar is longer and less arcuate than in *spirifex* ♂.

Widely distributed in East Africa from the Soudan to Port Elizabeth, also recorded from West Africa, Transvaal and Sicily.

*S. (Pelopoeus) complex* Kohl. *Ann. K.K.N.H. Mus. Wien*, xxxii, p. 107, ♀. (March) 1918.

*S. massaicum* Turner. *Ann. Mag. N.H.* III, No. 16, p. 393, ♀. (April) 1918.

♀. 21 mm. long. In view of the variability within the species of the width of the vertex and of the length of the petiole, the admission of this form to specific rank does not seem justified. Apart from the slight differences already mentioned in the description of *Quartinae*, it differs from that species only as follows:

The interocular distance on the vertex is equal to the length of the second joint of the flagellum plus one-third of the following joint. The third joint is three and a half times longer than wide, whereas in *Quartinae* it is four times. It approaches the race *Voeltzkovii* in having the apical half or two-thirds of the petiole black, also in having the legs black, excepting the anterior femora and tibiae which are fusco-ferruginous in front, and the scapes more or less fusco-ferruginous in front. The petiole is as long as the hind femur and trochanter united, or is equal to the length of the hind tibia plus half the basal joint of the hind tarsus. The wings are slightly darker, with a faint violaceous reflection.

I have seen a specimen of *massaicum* Turner from the Masai Reserve, B.E. Africa, which agrees entirely with Kohl's description of *complex* except in having the scapes and tegulae entirely black. Without having seen the type of the race *Voeltzkovii* I hesitate to sink *complex* in synonymy, but it will probably be necessary to do so.

Kohl gives the habitat of *complex* as Samlia River, N. Gamio, and Turner records *massaicum* from Uganda and East Africa.

*S. (Pelopoeus) fulvohirtum* n.sp. (fig. 4).

♀. 18 mm. long. Allied to *Quartinae*, but a smaller and more slender insect, with a narrower thorax. Colour like that of *Quartinae*, but the pilosity of the head and thorax is not so dense, and is of a brownish colour, or, in some lights, reddish brown.

Sculpture of the thorax finer. The mesonotum is reticulate-rugulose; mesopleurae not shining as in *Quartinae*, but almost dull, much more closely punctured, the punctures somewhat elongate, and towards the sternum somewhat wavy, so that the sculpture there is almost rugulose. The sides of the epinotum are obliquely rugulose and dull, with very small punctures in between. The upper half of the declivity of the epinotum is reticulate-rugulose, the lower half transversely rugulose. The dorsum of the epinotum is transversely striate, and relatively, in view of its smaller size, much more closely and more finely so than in *Quartinae*. The pronotal collar is longer and rounder,

the anterior face not falling away so steeply from the dorsal face as in *Quartinae* (see figs. 4, 4 a); the dorsal face is hardly impressed at all in the middle. The dorsum of the epinotum, measured from the base to the apex of the raised median area, is shorter; it is a trifle more than one-third the length of the petiole, whereas in *Quartinae* it is nearly half as long. The petiole is as long as the hind trochanter and femur united. The second joint of the flagellum is only one-third longer than the third joint (nearly one-half longer in *Quartinae*). Wings distinctly tinged with yellow; the second cubital cell is as wide as the third on the radius. Claws of the hind legs with a distinct tooth in the middle.

♂. 16–19 mm. long. Pilosity longer and a little paler than in the ♀. It differs from *Quartinae* in the sculpture in the same way as in the ♀, but on the anterior third of the mesonotum the transverse-oblique rugulosity is absent, being replaced by a few deep and not very small punctures. The petiole is variable in length; in two specimens it is even longer than in the other sex, being very nearly as long as the posterior coxa, trochanter and femur combined, and in two other specimens it is shorter than that by only half the length of the coxa. Second joint of the flagellum not quite one-third longer than the third joint (in *Quartinae* ♂ the second joint is half as long again as the third). The face is slightly wider than in *Quartinae* and the median area of the clypeus is a little less produced in front.

In two of the four ♂♂ examined, the second cubital cell is wider on the radius than the third, in the other two it is as wide.

1 ♀, 3 ♂♂, Sanyati River, S. Rhodesia (R. H. R. Stevenson); 1 ♂, Umtali, S. Rhodesia (G. Arnold). September–October. Types in coll. Stevenson.

#### Genus SPHEX Linn.

*Syst. Nat. Edit. x*, No. 216, pp. 569–72. 1758.

*Fauna Suecica*, p. 411. 1761.

*Ammophila* Kirby. *Trans. Linn. Soc.* iv, p. 195. 1798.

CHARACTERS. Eyes large, reaching the base of the mandibles, their inner margins usually parallel in the ♀, more or less convergent below in the ♂. Mandibles stout, armed with one or two teeth on the inner margin. Apical joint of the antennae truncate. Episternal suture present in the majority of the species. Epinotal dorsum with a scutiform median area which is usually well-defined from the rest of the segment by a difference of sculpture and pubescence. Abdomen petiolate, the petiole being formed by the first sternite only (petiole one-jointed), or by the first sternite and by the first tergite placed behind the sternite, thereby making the petiole two-jointed. The apical tergite does not entirely cover the apical sternite; pygidial area absent. Legs spinose, more strongly so in the ♀ than in the ♂, the anterior tarsi with a long comb in the ♀. The first four joints of the anterior tarsus, or at least the basal joint, are with few exceptions asymmetrical in the ♀, the apex on the outer side being produced into a lobe. The middle coxae are not contiguous. Claws usually simple, but in the subgenus *Parapsammophila* armed with one or two teeth near the base.

Fore wing. Radial cell short, the radius ending on the costa. Three cubital cells present, or (subgenus *Coloptera*) only two, in which case the apparent second is formed by the fusion of the second and third. In some species (not present in the Ethiopian region), the third cubital cell is stalked on the radius.

Hind wing. The cubital vein arises a little beyond the end of the submedial cell. The basal lobe is very large, ends near the anal sinus, and as in *Sceliphron*

and *Chlorion*, can be folded over, the line of folding being distinctly defined. Retinaculum continuous, beginning at the origin of the radius.

Distribution. Both hemispheres.

The prey consists of hairless caterpillars, and the nest, which is placed in the ground, is a short and oblique tunnel ending in a pocket. The number of caterpillars in each nest varies with the species. Some store one or two large ones, others may use five or six small caterpillars. In *Wasps*, *Social and Solitary*, the Peckhams have given an interesting record of their observations on the habits of some North American species.

In the following descriptions it is to be understood that the width of the head includes the eyes. In measurements of the petiole, the length of the joints is to be taken on the dorsal surface, which in the case of the first joint does not include the whole of the sternite, since on the ventral surface the sternite is continued more or less under the first tergite. The hairy covering in these insects is of four kinds; the longer, outstanding hairs or *pilosity*, the short and more or less decumbent hairs on the head and thorax, or *pubescence*, a covering of rather woolly hairs which is often mixed with the pubescence, or *tomentum*, and lastly, a microscopic or pruinose pubescence which occurs on the abdominal segments.

A revision of the South African species of the genus was made by the author in the *Proc. Rhodesia Scientific Association*, vol. XVIII, pt 2, 1919-20, and the Palaearctic species were monographed by Kohl in the *Ann. K.K.N.H. Mus. Wien*, vol. XXI, 1906. The latter work also includes a few species of the Ethiopian region. The descriptions of *gracillima* Tasch., *propinqua* Tasch., and *cyanipennis* Lep., which are unknown to me in nature, have been copied from Kohl's work.

There are also several other species which have not been considered in the following pages. Their original descriptions are so inadequate, being based mainly on colour, that it is almost impossible to identify the species. These species are:

*erythropus* Smith. *Cat. Hymen. B.M.* IV, p. 213. 1856.

*insignis* Smith. *Ibid.* p. 213, ♀, ♂. 1856.

(*Coloptera*) *proxima* Smith. *Ibid.* p. 225, ♀. 1856. (Possibly synonymous with *Saussurei* Du Buysson.)

*confusa* Costa. *Ann. Mus. Zool. Nap.* II, p. 3. 1864.

*Wahlbergi* Dahlbom. *Hymen. Eur.* I, p. 431. 1845.

*rubigenosa* Lep. *Hist. Nat. Ins.* III, p. 372, ♀. 1845.

*rubriceps* Tasch. *Zeitschr. Naturw.* XXXIV, p. 432, ♂. 1869. (Probably synonymous with *bonae-spei* Lep.)

*Koppenfelsi* Tasch. *Ibid.* LIII, p. 777, ♀, ♂. 1880. (Probably synonymous with *beniniensis* Pal. Beauv.)

Of the several species described by Cameron in Sjöstedt's Kilimandjaro-Meru Expedition results, some are undoubtedly synonyms, and the rest are unrecognisable. Some Egyptian and Mediterranean species, whose distribution extends as far as Khartoum, have not been included in these pages, and in the key to the species, those of which I have not seen specimens have also been omitted.

#### KEY TO THE SPECIES OF *SPHEX*, ♀♀

- (4) 1. Wings with two cubital cells. Episternal suture obsolete or nearly so. Claws unarmed. Pulvillus present. Petiole 2-jointed; the stigmata of the first tergite are situated well behind the middle of the segment. (Subgenus *Coloptera* Lep.)
- (3) 2. Anterior angles of the pronotal collar raised to form obliquely truncated tubercles; scutellum and metanotum very much raised and tubercular in the middle. tuberculiscutis Turner

- (2) 3. Anterior angles of the pronotal collar rounded and not tubercular; scutellum slightly, metanotum more distinctly tubercular in the middle. *Saussurei* Du Buysson
- (1) 4. Wings with three cubital cells.
- (14) 5. First tergite subdilated posteriorly, more or less pyriform or funnel-shaped, the petiole proper 1-jointed and composed only of the first sternite. Episternal suture present.
- (11) 6. The stigmata of the first tergite are situated at, or a little behind, the middle of the segment. Claws bidentate, the pulvillus present. The third cubital cell is usually more or less barrel-shaped. (Subgenus *Parapsammophila* Tasch.)
- (8) 7. Body and legs black; first two joints of the antennae and the clypeus in greater part ferruginous; wings dark, with metallic blue or purplish lustre. *ludovicus* Smith
- (7) 8. Legs red, at least not entirely black; wings hyaline or subhyaline. Head, thorax and petiole with at least some red colour.
- (10) 9. Scutellum saddle-shaped, raised at the sides, concave transversely and feebly convex longitudinally. *herero* Arnold
- (9) 10. Scutellum not saddle-shaped, flat or moderately convex transversely. *consobrinus* Arnold
- (6) 11. Stigmata of the first tergite placed in the anterior half of the segment, or almost at the middle; claws unarmed, rarely unidentate. (Subgenus *Psammophila* Dahlbom)
- (13) 12. Pilosity of the head and thorax black. Posterior ocelli twice as far from the eyes as they are from each other. Second joint of the flagellum about one-half longer than the third. Length 22-27 mm. *Sheffieldi* Turner
- (12) 13. Pilosity of the head and thorax whitish. Posterior ocelli half as far again from the eyes as they are from each other. Second joint of the flagellum about three-fifths longer than the third. Length 16.5-21 mm. *Tydei* Guill., var. *capensis* Lep.
- (5) 14. First tergite of abdomen elongate, hardly wider than the first sternite, making the petiole 2-jointed. Stigmata of the first tergite placed behind the middle of the segment, or sometimes at the middle. Claws unarmed. (Subgenus *Sphex* Linn.)
- (16) 15. Large species, 30-32 mm. long. Anterior border of pronotal collar sharply marginate, forming a sharp angle with the almost vertical anterior face; the dorsal face with not more than three straight, more or less complete transverse carinae, the spaces between them finely pubescent and dull. *vulcania* Du Buysson
- (15) 16. Dorsal face of pronotal collar differently formed, not distinctly marginate in front; if distinctly rugose or striate, then the spaces between are shining.
- (28) 17. Pronotal collar more or less striato-rugose.
- (21) 18. Large species, 28-30 mm. long. Mesonotum, and sometimes also the pronotum, with a dense blackish pilosity; the spaces between the rugae on the pronotal collar dull.
- (20) 19. Abdomen finely pubescent; thorax with at least some traces of red colour; dorsal face of pronotal collar as long in the middle as at the sides. *beniniensis* Pal. Beauv.
- (19) 20. Abdomen glabrous; thorax entirely black; dorsal face of pronotal collar shorter in the middle than at the sides, the anterior face more oblique. *beniniensis*, var. *calvus* Arnold
- (18) 21. Smaller species, 19-27 mm. long. Pronotum with a sparse pilosity or none at all.
- (25) 22. Pronotum half as long as wide behind, at least half as long as the mesonotum; head clearly wider than the thorax.
- (24) 23. Pronotum black, the collar strongly striated transversely. *Braunsi* Turner



- (23) 24. Pronotum red, the collar finely striated transversely. *laticeps* Arnold
- (22) 25. Pronotum much shorter, fully three times wider than long in the middle, and not one-third as long as the mesonotum; head not much wider than the thorax.
- (27) 26. Whole body densely pubescent, the thorax also tomentose; the spaces between the rugae on the pronotal collar are dull.  
*beniniensis*, race *tomentosus* Arnold
- (26) 27. Pubescence nowhere dense; pro- and mesonotum without visible pubescence; pronotal collar with five to seven transverse, sharply defined rugae, some of them interrupted, the spaces between smooth and shining. *tenuis* Pal. Beauv.
- (17) 28. Pronotal collar smooth or punctured, without rugae.
- (30) 29. Pronotal collar smooth, excavated in front on each side of the middle, so that viewed from above it is bluntly trituberculate, the shoulders forming the outer tubercles. *Peringueyi* Arnold
- (29) 30. Pronotal collar not trituberculate.
- (34) 31. Pronotal collar fairly long, the middle part raised to form a blunt cone or tubercle. Anterior margin of the clypeus convex.
- (33) 32. Head in front barely wider than long; inner margins of the eyes slightly convergent above; nearly half of the clypeus projects beyond the base of the eyes. *dolichocephala* Cameron
- (32) 33. Head in front one-fifth wider than long; inner margins of the eyes parallel or slightly divergent above; clypeus less produced in front. *conifera* Arnold
- (31) 34. Pronotal collar not tubercular in the middle.
- (44) 35. Pronotum short, not nearly half as long as the mesonotum.
- (39) 36. Clypeus abruptly truncate in front, the truncate and lateral margins meeting in a sharp angle.
- (38) 37. Abdomen entirely black, the apical half clothed with a very conspicuous silvery pubescence which obscures the ground-colour. *egregia* Mocs., race *transvaalensis* Cameron
- (37) 38. First tergite underneath, the whole of the second and the basal half of the third abdominal segments, ferruginous; the apical half of the abdomen with a thin pruinose pubescence. *egregia*, race *litoralis* Arnold
- (36) 39. Anterior margin of the clypeus convex, or if slightly truncate, not sharply angular on each side of the truncation.
- (41) 40. Face, anterior half of the clypeus and the vertex (excepting the ocellar area) fairly closely punctured with large and moderately deep punctures. *punctaticeps* Arnold
- (40) 41. Face and vertex sparsely and shallowly punctured.
- (43) 42. Sides of thorax without any red colour; pilosity long and silvery white. *bonae-spei* Lep.
- (42) 43. Sides of thorax usually with some red markings; pilosity shorter and greyish. *bonae-spei*, var. *ferrugineipes* Lep.
- (35) 44. Pronotum long, at least half as long as the mesonotum, and with a well-defined median longitudinal impression on the posterior half. *dolichodera* Kohl

#### KEY TO THE SPECIES OF *SPHEX*, ♂♂

- (4) 1. Wings with two cubital cells. Episternal suture obsolete or nearly so. Claws unarmed. Pulvillus present. Petiole 2-jointed, the stigmata of the first tergite are placed well behind the middle of the segment. (Subgenus *Coloptera* Lep.)
- (3) 2. Anterior angles of the pronotal collar raised to form obliquely truncate tubercles; scutellum and metanotum very much raised and tubercular in the middle. *tuberculiscutis* Turner

- (2) 3. Anterior angles of pronotal collar rounded, not tubercular; the scutellum slightly, the metanotum more distinctly, tubercular in the middle.  
*Saussurei* Du Buysson
- (1) 4. Wings with three cubital cells.
- (10) 5. First tergite subdiluted posteriorly, more or less pyriform or funnel-shaped, the petiole proper 1-jointed and composed only of the first sternite. Episternal suture present.
- (9) 6. The stigmata of the first tergite are placed at, or a little behind, the middle of the segment. Claws bidentate, the pulvillus present.  
(Subgenus *Parapsammophila* Tasch.)
- (8) 7. Wings dark brown, with a violaceous or steely-blue lustre; pilosity black; third cubital cell barrel-shaped.  
*ludovicus* Smith
- (7) 8. Wings hyaline; pilosity whitish; third cubital cell widest at the base.  
*herero* Arnold
- (6) 9. Stigmata of first tergite placed in the anterior half of the segment, or almost at the middle; claws unarmed, rarely unidentate.  
(Subgenus *Psammophila* Dahlbom) *tydei* Guillou, var. *capensis* Lep.
- (5) 10. First tergite of the abdomen elongate, hardly wider than the first sternite, making the petiole 2-jointed. Stigmata of the first tergite placed behind the middle of the segment, or sometimes at the middle. Claws unarmed.  
(Subgenus *Sphex* Linn.)
- (12) 11. Large species, 25–28 mm. long. Clypeus produced considerably beyond the face, narrowed in the middle, truncate at the apex, semi-circularly excised in the middle of the truncated margin, the projecting portion with two oblique carinae enclosing a concave depression.  
*vulcania* Du Buysson
- (11) 12. Clypeus differently formed.
- (16) 13. Head in front longer than wide; pronotum subtubercular in the middle.
- (15) 14. Clypeus produced, nearly half of it projecting beyond the base of the eyes, angularly excised at the apex, with a median carina extending from about the middle to the angle of the excision; stipites thick throughout, semi-circularly excised at the apex, the excision ending in a stout tooth above and several spines below.  
*dolichocephala* Cameron
- (14) 15. Clypeus less produced, the portion beyond the base of the eyes considerably less than the portion behind, the anterior margin transverse, not carinate; stipites gradually attenuated towards the apex and without an apical excision.  
*conifera* Arnold
- (13) 16. Head in front wider than long, or at least as wide as long.
- (20) 17. Pronotum long, a little more than half as long as the mesonotum.
- (19) 18. Pronotal collar rugoso-striate transversely.  
*Braunsi* Turner
- (18) 19. Pronotal collar smooth.  
*dolichodera* Kohl
- (17) 20. Pronotum short, much less than half as long as the mesonotum.
- (26) 21. Pronotum smooth, more or less punctured, not striate or rugose.
- (23) 22. Large species, 27–30 mm. Clypeus produced, the anterior margin truncate in the middle and subrectangular on each side of same. Stipites abruptly narrowed at the apical third.  
*egregia* Mocs., race *transvaalensis* Cam. and var. *litoralis* Arn.
- (22) 23. Smaller species, less than 25 mm. long. Clypeus and stipites differently formed.
- (25) 24. Face and vertex, excepting the ocellar area, fairly closely punctured with large and moderately deep punctures; stipites abruptly narrowed a little beyond the middle, the narrow part curved inwards.  
*puncticeps* Arnold
- (24) 25. Face and vertex sparsely and shallowly punctured; stipites gradually narrowed at about the apical third.  
*bonae-spei* and var. *ferrugineipes* Lep.

brown. Head and pro-thorax with a reddish outstanding pilosity, on the mesonotum darker and shorter. The epinotum and sides of the thorax have a sparse but fairly long grey pilosity. Lower part of the face with a thin pruinose pubescence. The abdomen has also a pruinose pubescence. Clypeus slightly shining, sparsely and shallowly punctured. Face and vertex shallowly punctured, the punctures small and close together at the sides below, larger and more scattered elsewhere. Collar of pronotum dull, shallowly, sparsely and finely punctured. Mesonotum closely and not coarsely rugose, sharply punctured between the rugae which diverge outwards and forwards from the middle; behind, the middle third of the segment has some large, elongate punctures and there is a smooth median longitudinal line extending from the anterior margin to about the middle. Scutellum and metanotum sparsely and sharply punctured, mesopleurae sparsely punctured and slightly shining above, striato-punctate below. Dorsum of the epinotum transversely, finely and fairly closely striato-rugose, the rugae directed slightly posteriorly from a thin median raised line; the sides closely rugulose-punctate. The whole thorax fairly dull. Abdomen smooth, the apical tergite with a few shallow punctures. Head one-quarter wider than long. Inner orbits parallel. Median area of the clypeus nearly flat, moderately produced in front, about as long as wide, the anterior margin feebly convex, the anterior corners rectangular. Interocular distance on the vertex equal to the length of the first four joints of the flagellum. The second joint of the flagellum is nearly as long as the third and fourth united. Temples, seen from the side, as wide as the eyes. Collar of pronotum about four times wider than long, its anterior face vertical and nearly flat transversely, the dorsal face feebly convex transversely, the shoulders prominent but not angular. Mesonotum wider across the tegulae than long in the middle, and a little longer than the epinotal dorsum. Scutellum concave transversely and convex longitudinally, raised at the sides, wider than long. Metanotum raised in the middle, as high as the scutellum, the raised portion flattened on top. Dorsum of the epinotum strongly convex transversely, sloping steeply from the middle outwards. Petiole as long as the posterior femora and about one-third longer than the first tergite. The latter is twice as long as its apical width and one-fourth longer than the second tergite. First four joints of the anterior tarsi strongly asymmetrical, the apices being produced into lobes outwardly, the lobe of the first joint being fully half as long as the joint itself. Claws of middle and hind legs with two small teeth near the base. First abscissa of the radius as long as the second, the latter as long as, or longer than, the third. The third cubital cell is not barrel-shaped, being widest below (in the type twice as wide on the cubitus as on the radius, in other specimens somewhat less). The second recurrent vein is nearly interstitial with the second transverse cubital vein.

♂. 21–22 mm. long. Black. Mandibles reddish ochreous, the apical third black. Clypeus varying from reddish ochreous to pale ferruginous, with a broad and indistinctly defined black line down the middle, not reaching the apical margin. Extreme base of the petiole and the sides and ventral surface of the first tergite brownish yellow. Tegulae pale brown. Legs in greater part pale reddish ochreous, with the following parts more or less dark brown: the upper surface of the coxae, trochanters, femora, fore and middle tibiae, the apical half or more of the hind tibiae on the inner side, the apices of the first four joints of the middle tarsi, the last joint of all the tarsi, and the third and fourth joints of the hind tarsi. Wings hyaline, the apical part beyond the cells almost clear, at least not distinctly clouded as in the ♀. Head and thorax, excepting the mesonotum and median area of the epinotal dorsum, clothed with a dense, greyish silvery and very fine pubescence, almost pruinose on

the vertex, occiput, pronotum and sides of the thorax. In addition, these parts excepting the clypeus have an abundant, long, white pilosity. The posterior coxae above are also pilose. Abdomen with a pruinose pubescence, the apical margins of the segments narrowly testaceous. The sculpture of the head is entirely obscured by the dense pubescence. The mesonotum is more finely sculptured than in the ♀; it is dull, closely and finely punctured, with a trace of transverse rugulosity in the middle. The scutellum is saddle-shaped as in the ♀. The sculpture of the rest of the thorax is like that of the ♀, but a little finer, and much obscured by the pubescence. The median area of the epinotal dorsum lacks the median longitudinal line which is present in the ♀. Eyes moderately convergent below; the interocular distance on the vertex equals the length of the second-fourth joints of the flagellum. The second joint is nearly twice as long as the third. The clypeus is as long in the middle as it is wide at its widest; it has a feeble median longitudinal carina and the anterior margin is strongly convex. Petiole half as long again as the first tergite. Eighth ventral plate subpyriform, with the narrow end (apex) truncate and shallowly emarginate. Stipites long, moderately widened outwardly just beyond the middle, then gradually narrowed to the apex, which is not very acute; the apical third of the inner margin has a few long setae. The sagittae are lanceolate and acute at the apex. Otherwise like the ♀.

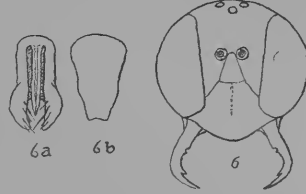


Fig. 6. *Sphex herero*, ♂. a. Genitalia, dorsal view. b. 8th ventral valve.

Kaross, Outjo and Otjikondo, S.W.A. 2 ♀♀, 4 ♂♂; Bulawayo and Gwaai River, S.R. (Stevenson). The types, from Kaross, in South African Museum coll.

*S. (Parapsammophila) consobrinus* n.sp. (figs. 5 b and c).

♀. 29 mm. long. Closely allied to *S. herero*, and with much the same sort of colouring. It differs from it as follows:

Only the anterior half of the median area of the clypeus is ferruginous, the rest is black. Scapes and first joint of the flagellum ferruginous, the rest black. Pronotum black, only a spot on the sides of the collar and the upper margin of the propleurae fusco-ferruginous. Legs ferruginous, the femora slightly suffused with black only at the base; tarsal joints and claws ferruginous. Petiole black. Vertex and occiput very shallowly, sparsely and finely punctured, much more finely so than in *herero*. Anterior half of the mesonotum transversely and finely rugose, very feebly punctured between the rugae; the middle third behind the centre of the segment shining, sparsely and finely punctured. Scutellum nearly flat, not raised at the sides and saddle-shaped as in *herero*. Postscutellum convex transversely and lengthwise. Dorsum of epinotum without the fine median raised line which is present in *herero*; shining, the oblique rugae stronger than in *herero*. Clypeus longer than in *herero*, two-thirds as long as wide, the anterior margin of the median area more distinctly depressed. Pronotum longer; seen in profile the convex dorsal face is continued into the oblique anterior face by a low curve; in *herero* the flattened dorsal face joins the subvertical anterior face by an abrupt curve, so that the junction of the two faces is subrectangular. Petiole shorter than in *herero*, not longer than the first tergite. Veins, excepting the costa and the stigma brownish ochreous, not black as in *herero*. Otherwise like that species.

Willowmore, February, 1 ♀ (Dr H. Brauns). Type in coll. Brauns.

*S. (Parapsammophila) cyaneipennis* Lep. *Hist. Nat. Ins. Hym.* III, p. 370, ♀. 1845. Kohl, *Ann. K.K.N.H. Mus. Wien*, XXI, p. 297, ♀, ♂. 1906.  
*S. reticollis* Ach. Costa, *Ann. Mus. Univ. Nap.* II, p. 111, ♂, ♀. 1864.

"26-38 mm. long (♂ 26-32 mm., ♀ 30-38 mm.). Black. The following parts are partially brownish red: the head, thorax, the whole of the prothorax, the mesonotum in front of the tegulae, a spot below the base of the wings, the legs and antennae more or less, and sometimes a part of the epinotum. Wings brown, with a violet or blue and violet lustre. Pilosity castaneous brown.

♀. Clypeus almost flat, broadly truncate in the middle in front, the truncation with a distinct dentiform angle on each side. Inner margins of the eyes almost parallel, very slightly convergent towards the vertex. Posterior ocelli nearer to each other than they are to the eyes. Second joint of the flagellum almost as long as the third and fourth united, not quite so long as the distance between the eyes and one of the posterior ocelli. Pronotal collar discoid, steeply declivous in front, the dorsal face with a small impression in the middle. Mesonotum rugose, the rugae somewhat anastomosed. The rugae are distinct, with the spaces between them punctured. In the sculpture of the mesonotum *cyaneipennis* ♀ differs from *ludovicus* ♀: in the latter species rugae are clearly developed only in the middle posteriorly, whence the puncturation stands out distinctly elsewhere. Mesopleurae coarsely and not closely punctured. Scutellum and postscutellum longitudinally striate. Dorsum of epinotum in the middle coarsely reticulate-rugose, the sides behind the stigmata sharply transversely striate. The dorsum of the epinotum in this as in the other species of the *Parapsammophila* group falls sharply away from the middle outwardly, so that it is not flat but appears conspicuously raised in the middle. Petiole not twice as long as the first tergite, a little shorter than the hind femur, and about as long as the first joint of the hind tarsus plus half of the second. Legs strongly spinose. Basal joint of the fore tarsi, and also the four following joints, asymmetrical, strongly produced outwardly at the end. The basal joint of the tarsus bears 8 to 9 spines on the outer margin. The third cubital cell is narrowed above and below, barrel-shaped; as a rule it is a little wider on the radius than on the cubitus. The second cubital cell is strongly narrowed above on the radius.

♂. Eyes distinctly convergent below. Clypeus not carinate, flat, impunctate, glabrous, and at the point where the eyes are nearest together not so wide as the length of the first two joints of the flagellum, but about equal to that of the third and fourth. The face in *ludovicus* and *unguicularis* ♂ appears, however, somewhat wider.

The inner margins of the eyes converge towards the vertex more than in *ludovicus*; at the level of the posterior ocelli their distance apart is equal to that across the clypeus, plus the distance between the eye and one of the posterior ocelli. The latter are about as far from each other as they are from the eyes. The sixth to twelfth joints of the flagellum, as in *ludovicus*, are swollen below, the swollen portion traversed with a smooth, raised line. The mesonotum is densely punctured, rugose between the punctures, the rugae stronger in the middle behind. The seventh sternite is emarginate, and the following sternite is also shallowly emarginate in the middle. The spatha of the genital armature, viewed from the side, is swollen."

Egypt, Nubia and Senegal.

*S. (Parapsammophila) unguicularis* Kohl. *Ann. K.K.N.H. Mus. Wien*, XVI, p. 142, ♂. 1901.

"Statura media, nigra, nigro pilosa, abdomen subcinereo-tomentosum. Alae nigro-fuscae, violaceo-coeruleo resplendentes, collare antice ad per-

pendiculum praeeruptum. Margines interni oculorum clypeum versus paullum converguntur. Oculi ad clypeum longitudine antennarum flagelli articulorum  $1m + 2di + dimidiati\ 3ti$ , fere longitudine artic.  $3ti + 4ti$  approximati sunt. Ocelli posteriores inter se paulo minus distant quam ab oculis. Flagelli articuli 6-12 subtus haud nodose incrassati, sed carinula longitudinali instructi.

Collare antice ad perpendiculum praeeruptum. Dorsulum punctatum et rugosum. Scutellum rugis longitudinalibus instructum. Mesopleurae et mesosternum punctata rugis fere carent. Segmenti mediani area dorsalis in parte media valde grosse rugosa, utrinque oblique strigosa. Petiolus pedum posticorum articulo  $1mo + dim.$   $2do$  longitudine circiter aequalis. Segmentum octavum in parte ventrali postice emarginatum.

♂. 22 mm. Altogether similar to the ♂ of *ludovicus* Smith, for a dwarf specimen of which species it might easily be mistaken. But, in addition to the smaller size, it differs from that species in many points. The face is proportionately wider, the least distance between the eyes across the clypeus being equal to the combined length of the first, second and half the third joints of the flagellum, only slightly less than that of the second and third, more than that of the third and fourth (in *ludovicus* equal to the length of the second plus two-thirds of the third joint, or equal to the length of the third and fourth united). The puncturation and striation of the mesonotum is coarser than in *ludovicus*; the sculpture of the epinotum is also much coarser, especially the reticulate rugosity on its dorsum. The ventral valve of the eighth abdominal segment is emarginate, not straight as in *ludovicus*; the form of the ninth ventral valve also differs from that of *ludovicus*, and approximates more to that of *A. miles*, the spatha, seen from above, becoming narrowed and lancet-shaped apically, seen from the side, laterally compressed as in *ludovicus*. The stipes is not so acuminate as in *ludovicus*.

Delagoa Bay."

S. (*Parapsammophila*) *testaceipes* Turner. *Ann. Mag. N.H.* (9), 1, No. 1, p. 90, ♂. 1918.

♂. Niger, albo-pilosus; mandibulis, apice excepto, clypeo in medio nigro-lineato, tegulis, pedibusque rufo-testaceis; coxis posticis, trochanteribus femoribusque posticis supra, tarsi intermediis posticisque articulo apicali, unguiculisque nigris; alis hyalinis, venis fusco-ferrugineis. Long. 25 mm."

♂. Clypeus broadly rounded at the apex, subdenticulate in the middle of the apical margin, clothed with delicate silver pubescence, which extends on to the front. Head and sides of the thorax rather densely clothed with long white hairs, the hairs on the mesonotum and dorsal surface of the median segment cinereous. Eyes convergent towards the clypeus, where they are separated by a distance slightly exceeding twice the length of the scape and first joint of the flagellum combined. Posterior ocelli separated from the eyes by a distance scarcely equal to the length of the third joint of the flagellum. Head and pronotum punctured-rugulose, the clypeus shining and almost smooth; mesonotum rugulose; dorsal surface of median segment closely transversely striate, the striae slightly curved in the middle. First joint of the petiole a little longer than the hind femur; second tergite longer than the apical breadth; seventh tergite broadly truncate at the apex; eighth sternite long, the sides almost parallel, the apex rather broadly truncate. Mesosternum not produced anteriorly. Tarsal unguis with two teeth close to the base; pulvilli large. Second recurrent nervure almost interstitial with the second transverse cubital nervure; second abscissa of the radius much longer than the third; third transverse cubital nervure rather strongly curved outwardly in the middle.

*Hab.* Valley of the Ruaha River, German East Africa (S. A. Neave), December 1910."

The above description would fit *S. herero* ♂ very closely but for the sculpture of the mesonotum and the shape of the eighth sternite. It may prove to be the ♂ of *S. consobrinus* since the scutellum is apparently not saddle-shaped, and the pronotum is black.

*S. (Psammophila) Tydei* Guillou, var. *capensis* Lep. (Plate X, figs. 2, 9, 10).

*Ann. Soc. Ent. France*, x, p. 319, ♀. 1841.

(var.) *Lepeletier. Hist. Nat. Ins. Hymen.* III, p. 368, ♂. 1845.

♀. 16.5–20 mm. Black, first tergite, second segment and the basal half or more of the third abdominal segment ferruginous, the first tergite and extreme margin of the second sometimes more or less blackish. Head, pronotum and mesonotum and abdomen shining, legs moderately shining, the rest of the body dull. Head, pro- and mesonotum coarsely, closely and deeply punctured, the sides of the pronotum and propleurae obliquely striate, the meso- and metapleurae closely punctured and dull, the spaces between the punctures aciculate. Epinotum closely and fairly finely rugoso-punctate. Face clothed with a silvery pile, which diminishes towards the ocelli; thorax clothed with a long, dense and greyish-white pilosity, legs with a very fine whitish pubescence and a few long hairs, especially on the coxae; a few long whitish hairs around the articulation of the petiole. Head from one-fourth to two-fifths wider than long. Face wider than long; clypeus from two-thirds to twice as wide as long, the anterior margin feebly convex, with a small round excision on each side of the median area. Second joint of the flagellum three-fifths longer than the third. Posterior ocelli separated from the eyes by a distance equal to the length of the third joint of the flagellum; they are half as far again from the eyes as they are from each other. Pronotum convex transversely, and convex from front to back above, the anterior face vertical. Petiole half as long again as the first tergite, as long as the posterior metatarsus or sometimes a little shorter; first tergite not more than two-thirds as long again as wide behind, usually only half as long again. Anterior metatarsus not strongly asymmetrical, the pecten not dense. Second cubital cell trapezoidal, receiving both recurrent veins; third cubital cell widest below the middle; wings yellowish, with a darker and well-defined apical infuscation beyond the cells. Claws without teeth.

♂. 16–19 mm. Sculpture and colour like that of the ♀, but the whole or greater part of the first tergite is often dark, and on the second and third dorsal segments of the abdomen the dark colour of the apical margin frequently extends over the greater part of the segments, leaving only the base reddish. The pruinose bloom on the abdomen is longer, more abundant and much more conspicuous than in the ♀, and the pilosity is denser and usually longer than in the ♀, especially on the face and cheeks. This character is, however, rather variable; in one or two specimens before me, the pronotum is less hirsute than the rest of the thorax, not hiding the puncturation. Head in front, with mandibles closed, almost triangular; the eyes convergent below but not strongly so. The face is two-thirds wider above than below; clypeus usually a little longer than, or at least as long as the anterior margin is wide, the latter feebly concave; from two-fifths to one-half of the clypeus projects beyond the anterior margin of the face. First sternite thinner than in the ♀, also a little longer, being from two-thirds to twice as long as the first tergite; the latter much narrower than in the ♀, being at least twice as long as wide apically. Abdomen narrower than in the ♀. Otherwise like that sex.

Common everywhere in the sub-continent.

*S. (Psammophila) Sheffieldi* Turner. *Ann. Mag. N.H.* (9) I, No. 1, p. 89, ♀. 1918.

♀. 22–27 mm. long. Black, the first and second tergites and basal third of the third tergite, the apex of the petiole below and the second and third sternites, red. Apart from its larger size, this species differs from *Tydeicapensis* as follows:

Wings more deeply tinged with yellow. Pilosity of the head and thorax long, dense and black; the face has a fine underlying silvery pubescence. On the sides of the thorax and on the epinotum there is a whitish pilosity intermixed with the black. The puncturation of the head is distinctly coarser and closer than in *capensis*, especially on the vertex and temples. The puncturation of the pro-mesothorax is also closer, the sculpture of the mesonotum being reticulate-punctate, the punctures almost contiguous. The mesonotum has a median longitudinal carina from the middle to the base. Dorsum of epinotum strongly reticulate-punctate, with a feeble median carina which does not reach the apex. Petiole as long as the basal joint of the hind tarsus, the basal third punctured and clothed with black hairs. Posterior ocelli twice as far from the eyes as they are from each other. The median area of the clypeus is slightly more produced than in *capensis*, and the lateral angles of its anterior margin are distinctly rectangular. Second joint of the flagellum half as long again as the third. Third cubital cell narrower than in *capensis*, nearly twice as wide on the cubitus as on the radius; the second abscissa of the radius is a little wider than the third, whereas in *capensis* it is narrower or only just as wide.

Mlanje, Nyasaland. March–May.

*S. (Coloptera) Saussurei* Du Buysson (Plate X, figs. 3, 8). *Ann. Soc. Ent. France*, LXVI, p. 357, ♀. 1897. Arnold, *Proc. Rhod. Sc. Assn.* XVIII, part 2, p. 34, ♂. 1919–20.

♂. 19 mm. Black, first and second joints of the antennae, mandibles except their apices, a median spot on the anterior margin of the clypeus, the upper surface of the pronotum, a sharply defined spot on each side of the mesonotum starting just behind the anterior margin and reaching the tegulae, the pronotal tubercles and tegulae, burnt-sienna red. Legs including the coxae, ferruginous, the middle and posterior tarsi brown, a narrow streak on the inner surface of all the coxae or of the middle and hind pairs, the femora and middle and hind tibiae, brown or brownish black. First joint of the petiole dark red, the first tergite, and the second tergite below, reddish brown.

Clypeus and lower half of the face, the pronotal tubercles and a narrow oblique streak on the posterior margin of the mesopleurae with silvery-golden pubescence, a patch of similar pubescence on each side of the epinotum above the petiole. Rest of the head with an exceedingly fine whitish pubescence. Sides of thorax with a microscopic greyish pile. Otherwise, excepting a few long hairs on the cheeks, glabrous. Abdomen with a sparse pruinose pubescence.

Head somewhat dull, very finely aciculate. Pro- and mesonotum nitidulous, very regularly and transversely carinate or rugose (the pronotum with 7 or 8 carinae), the scutellum and post-scutellum longitudinally striate, pro- and mesopleurae deeply and fairly closely punctured, with or without a superficial rugosity super-imposed. Dorsum of epinotum transversely rugose, somewhat reticulate-rugose at the base, the sides and declivity rugoso-punctate, the punctures deep.

Head, seen from above, roundly triangular, or semicircular, the occipital margin being very narrow; seen from in front, subcircular, as wide as long. Inner orbits parallel in their lower half, very feebly divergent in the upper,



the width of the face across the clypeus equal to the length of the second and third antennal joints combined. Clypeus one-third longer than wide, its posterior margin sharply angular, the anterior portion narrowed, produced, feebly excised in the middle; the distance between the posterior ocelli as great as their distance from the eyes.

Pronotum three-fourths wider than long, convex transversely above; post-scutellum, seen in profile, raised in the middle. Dorsum of epinotum nearly twice as long as the declivity, their junction distinctly angular; first joint of the petiole as long as the second, and as long as the posterior tibiae; second tergite two-thirds longer than its apical width. Tarsal claws without teeth, pulvillus well developed; posterior tarsi cylindrical. Wings with two cubital cells, the second subtrapezoidal and receiving both recurrent veins, twice as wide on the cubitus as on the radius.

♀. 20–25 mm. First joint of antenna ferruginous, the rest blackish with the second to fifth more or less blackish brown below. Face nearly one-third wider than long; inner orbits slightly convergent above, parallel below. Width of face across the clypeus equal to the length of the first three antennal joints combined. Clypeus two-thirds wider than long, the anterior margin convex, slightly emarginate in the middle, not produced. Distance between the posterior ocelli a trifle less than their distance from the eyes. Otherwise like the ♂.

This species differs from *S. (Coloptera) barbara* Lep. and *judaeorum* Kohl by the structure of the posterior tarsi, the sculpture of the mesopleurae and by the colour of the pro- and mesonotum.

A scarce species. Sawmills and Khami River, S.R.; Mfongosi, Zululand (W. E. Jones).

*S. (Coloptera) tuberculiscutis* Turner (figs. 7, 7 a-d). *Ann. Mag. N.H.* (9) III, No. 16, p. 396, ♀, ♂. 1919.

♀. 21–22 mm. long. Black, the following parts ferruginous: mandibles excepting the black apex, clypeus, scapes and first five joints of the flagellum, prothorax, sides of the mesonotum in front, the upper part of the mesopleurae under the wing-bases, tegulae, scutellum, postscutellum, ventral surface of the petiole, the second tergite, the apical tergite, the sternites somewhat diffusely, and the legs. All the femora are blackish above. Face, sides of clypeus, pronotal tubercles, posterior margin of the mesopleurae, sides and apex of the epinotum with a very fine, silky, pale golden pubescence. On the posterior margin of the mesopleurae this pubescence is very dense, and, as in *Saussurei*, forms a conspicuous, oblique and shining band. Temples and last sternite with a few, long, outstanding, yellowish hairs. Wings hyaline, tinged with yellow, the veins black. Head microscopically rugulose and fairly dull, except the middle of the clypeus and the temples which are slightly shining. Prothorax smooth and shining. The pronotal collar has the anterior angles produced into truncate tubercles, wider than long. Mesonotum transversely and regularly rugose, the rugae straight or cariniform<sup>1</sup>. Scutellum and meta-

<sup>1</sup> The sculpture consists of numerous carinae. The terms "striate" and "rugose" have been used somewhat loosely by many writers, including the author. Strictly speaking the word "rugose" should be used to indicate a sculpture consisting of raised lines, more or less wavy, and "striate" to indicate incised lines or sulci lying below the general surface. It is, however, not always possible to be quite precise, e.g. when the raised lines are not wider than the spaces between them, it is a matter of personal interpretation which term should be employed. "Striato-rugose" and "rugoso-striate" indicate these intermediate conditions. In the present instance the use of the word "carinate" is ambiguous and likely to lead to confusion, since in the usual sense it means that the *whole area* which is being described is furnished with a single keel. The terms "plicate" or "ribbed" might perhaps be more suitable in this case.

notum longitudinally plicate, both raised in the middle to form an elongate, flattened tubercle sharply marginate on each side. Mesopleurae slightly shining, sharply but not closely punctured. Dorsum of epinotum dull, closely and finely rugose; the sides and declivity of the segment and the metapleurae dull, closely rugose and strongly punctured between the rugae.

Mandibles with a large blunt tooth on the inner margin beyond the middle. Anterior margin of the median area of the clypeus feebly convex, rectangular at the corners. Inner margins of the eyes almost parallel. Second joint of the flagellum nearly half as long again as the third. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum. First joint of the petiole slightly longer than the second, and a little shorter than the hind femur; the whole petiole longer than the thorax. Anterior tarsi with a rather short comb, only the basal joint asymmetrical at the apex. Pulvillus well developed. Second abscissa of the radius about half as long as the first.

♂. 22–25 mm. long. Pubescence of the face very dense and bright golden. The pronotal collar has two or three transverse rugae in the middle, but the anterior lateral tubercles are less developed than in the ♀, and are more convex or not so clearly truncate as in the other sex. Clypeus triangularly produced, the apex rounded. Stipes angularly bent before the middle, the posterior margin roundly dilated below the middle, the apex narrow and bifid. Otherwise like the ♀.

British East Africa.

Turner in his description says the first joint of the petiole in the ♀ is as long as the hind femur and trochanter combined, and in the ♂ even longer; but in the specimens which I have seen, from Mtito Andei and Tiwa River, and determined by Turner himself, the first joint is certainly a little shorter than the femur alone.

*S. (Coloptera) crassifemoralis* Turner. *Ann. Mag. N.H.* (9) IV, No. 19, p. 48, ♂. 1919.

“♂. Nigra; mandibulis, apice excepto, flagello articulis sex basalibus, pronoto lateribus, callis humeralibus, tegulis, mesonoto utrinque ante tegulas, petiolo subtus, sternitis, in medio nigro-suffusis, tergito septimo, pedibusque ferrugineis; femoribus, trochanteribus intermediis posticisque coxisque posticis, supra nigris; tibiis posticis supra nigrolineatis; alis sordide flavo-hyalinis, apice leviter infumatis, venis ferrugineis; pronoto mesonotoque fortiter transverse striatis; scutello postscutelloque fortiter longitudinaliter striatis, convexis, haud lamellato-productis; tergito septimo apice late truncato. Long. 22 mm.”

“♂. Clypeus broadly truncate at the apex, broader than long. Eyes distinctly, but not very strongly convergent towards the clypeus; posterior ocelli nearly half as far again from the eyes as from each other, and twice as far from the hind margin of the head as from each other. Head strongly narrowed behind the eyes, the clypeus and front densely clothed with pale golden pubescence. Propleurae coarsely rugulose; mesopleurae and sides of

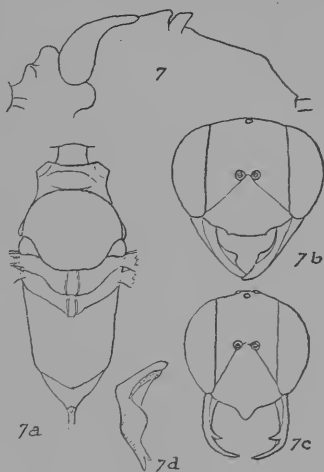


Fig. 7. *S. tuberculiscutis*, ♀, profile of thorax. a. Thorax, dorsal view. b. ♀, head. c. ♂, head. d. ♂, left stipes.

median segment irregularly obliquely striated, coarsely punctured between the striae; a broad band of pale golden pubescence on the mesopleurae behind, a patch of same below the humeral calli, and a patch on each side of the median segment at the apex. Dorsal surface of the median segment coarsely obliquely striate-reticulate. First joint of the petiole a little shorter than the hind femur and trochanter combined; second tergite subtriangular, a little longer than its apical breadth. Hind femur stout and massive as compared with the allied species; pulvillus large.

*Hab.* Southern slopes of Mt Elgon, 5100 to 5800 ft. (S. A. Neave), June; Valley of Nzoia River, N. Kavirondo, 5100-5400 ft. (S. A. Neave), June. Nearly allied to *S. Saussurei* Buyss., and *S. tuberculiscutis* Turner, but it is a more robust species, and differs in the simple scutellum and postscutellum, which are produced in a lamelliform manner in the two species mentioned. The clypeus is very different to that of *tuberculiscutis* ♂, also the pronotum, and the petiole is shorter. Type in British Museum."

*S. vulcania* Du Buysson (Plate X, figs. 5-7). *Ann. Soc. Ent. France*, LXVI, p. 256, ♂. 1897. Arnold, *Proc. Rhod. Sc. Assn.* XVIII, part 2, p. 35, ♀. 1919-20.

♀. 32 mm. Black; head, prothorax above, tegulae and sometimes the posterior lateral margins of the mesonotum, sometimes a lenticular spot on each side of the dorsum of the epinotum, first 3-6 joints of the antennae and the legs in greater part, dark castaneous red; a patch of variable size between the ocelli, blackish. The inner sides of the anterior and middle femora, the posterior femora except at their apices and the inner sides of the posterior tibiae, dark brown or piceous. In specimens from Rhodesia, the middle tarsi and the whole of the hind legs are piceous, and the two spots on the epinotum are sometimes absent.

The amount of red on the antennae is variable, in some Rhodesian specimens only the first two joints and the lower side of the third being red. Apical half of the mandibles black. Abdomen black, with a very faint greenish-blue metallic shimmer. Face and clypeus with a sparse black pilosity. Anterior face of the pronotum with black hairs, sides of thorax and epinotum with long whitish hairs. Clothed all over with a very fine greyish pubescence, even on the legs, giving the insect a rather dusty appearance; on the last three abdominal segments this pubescence is denser and pruinose. Dull, head closely and microscopically alutaceous, the clypeus near the anterior margin with a few large, the vertex with a few small and shallow punctures. Dorsum of pronotum sharply marginate in front, with two or three strong transverse rugae behind, the anterior face smooth.

Mesonotum transversely rugoso-striate, the striae on the anterior third often interrupted in the middle by a longitudinally impressed line. Scutellum and post-scutellum closely and sharply striate longitudinally. Dorsum of epinotum transversely and more or less obliquely striate, the striae becoming rugae in the middle. Sides of thorax rugoso-striate, reticulate or shagreened between the striae, which are more or less vertical.

Head, seen from in front, nearly one-third wider than long; inner orbits slightly convergent above, parallel along their lower three-fourths. The width of the anterior margin of the face is equal to the length of the first three antennal joints combined. Clypeus rhomboidal, nearly twice as wide as long in the middle, not very convex. Distance between the posterior ocelli clearly less than their distance from the eyes. Anterior face of pronotum only a little longer than the dorsal, the latter three and a half times wider than long, with well-marked anterior lateral angles. Posterior half of the dorsum of

the epinotum semicircularly marginate, the margin ending at the stigmata; the dorsum is twice as long as the declivity, which it joins angularly. First joint of petiole not quite as long as the posterior femur or the second joint, the latter moderately incrassate posteriorly; second tergite a little longer than wide. Claws unarmed, pulvilli wanting. Wings smoky-brown, darker over the apical margin, with a slight violaceous tinge; both recurrent veins enter the second cubical cell, which is nearly three times wider on the cubitus than on the radius, the third cubital cell as wide on the cubitus as on the radius.

♂. 25–28 mm. Pilosity a little more abundant and longer than in the ♀, the face and clypeus clothed with a silvery or golden pubescence which is sufficiently dense to hide the integument. Colour like that of the ♀, but the head, excepting the clypeus, is entirely black. The sculpture is everywhere stronger than in the ♀, especially on the upper surface of the thorax. The dorsum of the epinotum is usually transversely striate, but is sometimes rugose, or rugoso-reticulate. The colour of the legs is darker, the red being confined to the inner face of the anterior femora, middle femora and tibiae, and the hind tibiae. Head narrower than in the ♀; inner orbits almost parallel; clypeus longer than wide, narrowed anteriorly and produced, hollowed out above the projection, the latter rectangular at the corners and deeply emarginate in the middle, appearing almost bidentate (Plate X, fig. 6). Wings paler than in the ♀. Petiole and abdomen narrower; pulvilli present. Otherwise like the ♀.

Widely distributed, but not plentiful. Cape Prov., Transvaal, Natal and Rhodesia.

*S. beniniensis* Pal. Beauv. (Plate XI, fig. 40). *Insect. rec. en Afr. et Amér.* p. 48. 1837.

*S. lugubris* Gerst. Peters: *Reise n. Mossamb.* v, p. 480. 1862.

♀. 28–30 mm. Not unlike *vulcania* Du Buyss., superficially. Black, the head and mandibles, excepting the teeth, dark ferruginous, the space between the ocelli and two patches round the front and sides of the anterior ocellus, black. These black patches are variable in shape and extent, sometimes coalescing to form a W-shaped mark. First two joints of the antennae ferruginous, the third ferruginous below and over the basal half above. Prothorax dark ferruginous, the neck, the propleurae and anterior face of the pronotum black, the black sometimes extending to a variable width in the middle over the dorsal face of the pronotum and along its posterior margin. A roundish spot on each side of the mesonotum in front of the tegulae dark red (occasionally absent), tegulae brown or ferruginous, the rest of the thorax and abdomen black. Abdomen with a greenish tinge, more apparent on the fourth and fifth segments, not hidden by the thin pruinose pubescence, which is denser on those segments than on the rest. Prothorax, mesothorax, sides of metathorax and epinotum, with black, coarse and exserted hairs, on the sides of the epinotum sometimes intermixed with greyish hairs.

An inconspicuous greyish tomentum sometimes present on the sides of the thorax and epinotum. Legs ferruginous, the middle and hind coxae, trochanters and femora more or less black on their inner faces, the anterior coxae, trochanters and femora with a black streak on their inner faces. Face and vertex dull, sparsely and shallowly punctured; clypeus with larger but still shallow punctures.

Head in front one-fifth wider than long; inner margins of the eyes feebly convergent above; the distance between the posterior ocelli barely shorter than their distance from the eyes. Clypeus convex in the middle, feebly concave laterally, the anterior margin convex, slightly reflected, and shallowly indented in the middle. Pro- and mesonotum transversely striato-rugose, the

spaces between the rugae moderately shining, indistinctly punctured. The anterior face of the pronotum subvertical, the dorsal face from two and a half to three times wider than long, hardly shorter in the middle than at the sides. Scutellum and postscutellum sharply and longitudinally striate; dorsum of epinotum transversely and coarsely striato-rugose, also partly reticulate, the rugae strongest at the sides. Sides of thorax closely and vertically rugose, the spaces between the rugae fairly closely punctured. The dorsum of the epinotum is two and a third times longer than the declivity, which it joins in an obtuse angle. The joints of the petiole subequal, the whole petiole almost as long as the head and thorax together. Wings dark brown or pale brown, darkest near the base, with a violaceous lustre; first and second abscissae of the radius equal in length, or the second a little shorter, second cubital cell twice as wide on the cubitus as on the radius, the third cubital cell widest a little below the middle.

♂. 22–24 mm. Face with a silvery-grey pubescence. Head black, the scapes reddish, the rest of the antennae black. On the thorax the red colour is confined to a small spot on each side of the pronotum, to the propleurae and tegulae. The metallic shimmer on the abdomen more pronounced than in the ♀, more bluish. Legs darker, the upper surfaces of all the tibiae and femora black, the posterior legs black except the inner and lower faces of the coxae and trochanters, and the bases and apices of the femora. Sides of thorax with a dense grey pilosity. The pro- and mesonotum more distinctly punctured between the striae than in the ♀, and with the scutate area of the epinotum duller and more closely reticulate. Head nearly one-third wider than long; the inner margins of the eyes convergent below; the anterior margin of the clypeus feebly concave. Stipites (Plate XI, fig. 40) gradually narrowed and slightly incurved towards their apices, which are subacute, the upper margin of the apical third furnished with a row of 5 or 6 stiff bristles, and the rest of that part of the stipites finely pubescent. Otherwise like the ♀. Widely distributed and fairly abundant.

Rhodesia, Natal, Transvaal and Eastern Cape Province.

var. *calvus* Arnold (Plate XI, figs. 18–20). *Proc. Rhod. Sc. Assn.* XVIII, part 2, p. 38, ♀, ♂. 1919–20.

♀. 30–32 mm. This differs from the type species as follows:

Pilosity of the thorax very scanty, almost absent from the mesonotum and pleurae. Abdomen without visible pubescence, so that the metallic greenish colour is made more apparent. Clypeus more strongly punctured. The black maculae on the vertex more extensive, in some cases extending back to the occipital margin. Thorax entirely black. The striae on the pro- and mesonotum closer together, the spaces between them dull. The dull and rugulose anterior face of the pronotum is longer and slopes backwards and upwards more obliquely than in the type of the species, thereby reducing the length of the dorsal face, which is distinctly longer at the sides than in the middle.

♂. 24 mm. Like the ♀ in colour, but the head and antennae are entirely black, the mandibles ferruginous over the basal two-thirds. Inner faces of apical half of the anterior femora and basal half of anterior tibiae and basal fourth of hind tibiae, more or less ferruginous, the rest of the legs black. The greater part of the face and clypeus clothed with a dense silvery pubescence. Thorax with a thin greyish pile, more abundant on the pleurae. Clypeus, cheeks and thorax with a fairly long greyish-white pilosity, fairly abundant all over except on the dorsum of thorax. The last four abdominal segments with a thin pruinose pubescence. Sculpture similar to that of the ♀, but a little less coarse, the head more closely punctured. Head, seen from in front,

one-fourth wider than long; inner orbits distinctly convergent below, the distance between them across the vertex being at least one and a half times greater than their distance across the clypeus; posterior ocelli slightly nearer to each other than they are to the eyes. Clypeus only slightly produced, the anterior margin transverse, not excised in the middle. Petiole nearly one-fourth longer than the head and thorax combined. First segment of petiole as long as the second, and as long as the posterior tibia. All the tarsi with pulvilli (absent in the ♀). Otherwise like the ♀.

Umgusan and Sawmills, S.R.; Zululand. Types in the Rhodesia Museum.

race *tomentosus* Arnold. *Loc. cit.* p. 39, ♀.

♀. 23.5 mm. This form differs from the type of the species in its smaller size and also in the following features:

The whole body, including the femora and tibiae, is clothed with a very fine greyish pubescence, which on the thorax is tomentose and to a certain extent hides the sculpture. On the clypeus the pubescence is dense and silvery, on the abdomen pruinose, masking the metallic sheen of the integument. The black macula on the vertex is confined to the interocellar space and to a narrow T-shaped extension on each side of same. The prothorax, excepting the neck, the anterior angles of the mesonotum, a spot below the tegulae, the posterior border of the mesopleurae, the metapleurae just above the coxae, the posterior corners of the epinotum and a more or less elliptical patch on each side of the dorsum of the epinotum, ferruginous. Legs ferruginous, the inner and upper surfaces of all the trochanters and femora, and the posterior coxae, blackish. First six joints of the antennae ferruginous, the rest darker and becoming increasingly so towards the apical joint. Wings yellowish fuscous, with a very faint violaceous shimmer.

Windhoek, S.W.A. Protectorate. (F. Wilde.) Type in the Transvaal Museum.

*S. tenuis* Pal. Beauv. (Plate XI, figs. 21-23). *Insect. rec. en Afr. et Amér.* p. 48.

1837.

*S. rugicollis* Lep. *Hist. Nat. Ins. Hymen.* III, p. 373, ♂. 1845.

*S. coeruleornata* Cam. *Ann. Trans. Mus.* II, p. 135, ♂. 1910.

*S. maculifrons* Cam. *Ibid.* p. 134, ♀. 1910.

*S. guineensis* Ritsema. *Tijdschr. v. Ent.* XVII, p. 192, ♀. 1874.

This species is remarkably variable in size and colour, and in both sexes shows a distinct amount of variation in the width of the face. The species is closely related to *beniniensis* Pal. Beauv.; in the males I can see no difference in the structure of the genitalia. It differs from *beniniensis* chiefly in its lesser size and in the sculpture of the pronotum.

In the following description I have chosen examples intermediate in size and colour.

♀. 19.5-27 mm. Head ferruginous, an M-shaped spot on the vertex black; first and lower surface of the second and third joints of the antennae ferruginous, the rest black; mandibles ferruginous, their apices black. Thorax black, a transverse band on the prothorax ferruginous, often interrupted above in the middle; tegulae ferruginous. A more or less triangular spot on the mesopleurae with its apex reaching the coxae, ferruginous, and a longitudinal streak of the same colour on the sides of the epinotum just above the posterior coxae. First segment of petiole black, the second blackish above and reddish below, the apex of the former red. Second abdominal segment red below, black on the basal half above, the apical half ferruginous and gradually infusate towards the apical margin; sometimes entirely black or dark brown.

The other abdominal segments steely blue above, black below, the apical margins more or less ferruginous. Legs red, all the coxae in front and behind, the trochanters, femora and posterior tibiae more or less black or streaked with black. Clothed all over with a greyish silvery and short pubescence, forming a dense pile on the face and clypeus; the apical half of the abdomen with pruinose pubescence. Pilosity on the head brownish, fairly dense and exerted on the clypeus and cheeks. On the thorax the pilosity is shorter, greyish on the sides and on the epinotum. Head alutaceous, dull except on the occiput, shallowly punctured, the puncturation stronger behind the ocelli and above the antennal sockets. Clypeus sparsely and coarsely punctured. Pronotum like that of *S. Saussurei* Du Buysson, strongly and transversely sulcate-striate, the carinae (of which there are about five on the dorsal surface) extending right down the sides.

Mesonotum transversely and strongly rugose, the rugae somewhat curved behind. Scutellum and post-scutellum longitudinally striate, the dorsum of the epinotum transversely reticulate-rugose, the meso- and metapleurae and sides of epinotum obliquely reticulate-rugose and rugulose between the striae.

Head, seen from in front, nearly one-third wider than long, the inner orbits of the eyes very slightly convergent below and above, or almost parallel, the clypeus not much produced beyond the face, slightly impressed behind the anterior margin, which is feebly concave. The distance between the posterior ocelli is less than their distance from the eyes by about the width of the ocellus. Dorsal and anterior faces of the pronotum fairly sharply delimited, but not so angularly as in *vulcania*, the dorsal face of the pronotum is three and a half times wider than long, the shoulders a little rounded. Dorsum of epinotum not quite twice as long as the very oblique declivity. The joints of the petiole subequal, each a little shorter than the posterior femora. Anterior metatarsus very slightly asymmetrical. Wings smoky yellow, veins dark ochreous brown, with only a very slight violaceous shimmer; the form of the cubital cells is very much like that of *beniniensis* but the second is less narrowed on the radius, and the third is widest below the middle, with the outer transverse cubital vein directed more obliquely inwards and more curved below (Plate XI, fig. 21).

The variations in colour in this sex range are as follows:

In the form in which the red colour is most extensive (Algoa Bay, leg. Brauns), the following parts are ferruginous: the whole of the head excepting the macula on the vertex, a spot on each anterior corner of the mesonotum, the whole of the pronotum excepting the neck, the mesopleurae and mesosternum, the sides and lower lateral angles of the epinotum, an elongate spot on each side of the dorsum of the epinotum and lying within the scutate area of same, a transverse spot on the scutellum, the first tergite below, the second tergite and all the ventral surface of the second-sixth segments.

In the more melanic forms, the whole of the thorax is black, excepting a transverse band on the posterior half of the pronotum which is more or less widely interrupted with black in the middle.

The macula on the vertex varies considerably in extent and shape, and in one specimen before me extends over the whole of the head, excepting the back of the cheeks, the anterior margin of the clypeus and two patches just above the antennal sockets.

♂. 15-22.5 mm. Very variable in size and coloration. Head entirely black, mandibles ferruginous, the apices black; scapes more or less ferruginous underneath. Colour of thorax as in the ♀, and varying as follows. The dorsal surface and sides of the pronotum may be entirely red, or the central black spot may spread so much as to leave only a small ferruginous spot on

each side. Occasionally the first three joints of the flagellum are more or less red.

The triangular red patch on the mesopleurae and the longitudinal streak on the sides of the epinotum may be as in the ♀ or larger, in which case the red colour extends over the whole of the lower half of the declivity of the epinotum, or the red colour may be absent from the thorax except on the dorsum of the pronotum and the tubercles. The latter is more frequently seen in Rhodesian and Natal specimens. In the forms with red on the mesopleurae there is also sometimes a small red spot just under the tegulae. The colour of the abdomen is similar to that of the ♀, but in all the specimens which I have seen, the second segment is never ferruginous above, and only faintly so on the ventral surface, the metallic colour of the other segments is a little more pronounced than in the ♀, varying from a greenish blue to violet blue. The colour of the legs is very variable, but is usually darker than in the ♀. Pubescence and pilosity more abundant than in the ♀, the erect hairs on the dorsum of the thorax and on the head darker and longer. Face usually more closely punctured than in the ♀. The sculpture elsewhere like that of the ♀, but very variable in details. In some specimens, chiefly Rhodesian, the transverse striation of the mesonotum is very sharp and distinct, as much as in *S. Saussurei*; in others it may be rugulose between the striae and duller.

Head, seen from in front, about one-fourth wider than long, not very convex above. Inner orbits of the eyes always distinctly convergent below, the degree of convergence somewhat variable; usually the distance between them on the vertex is as great as the length of the eye, and the distance between them at their nearest approximation below is not more than the width of the eye seen from in front. Ocelli as in the ♀. Clypeus as long as, or a little longer than wide, not much produced beyond the face, the anterior margin arcuate. Otherwise like the ♀.

Fairly abundant throughout the subcontinent.

*S. Braunsi* Turner (Plate XI, figs. 24, 25, 27). *Ann. Mag. N.H.* (9), III, No. 16, p. 395, ♀, ♂. 1919.

♀. 19 mm. Black, mandibles excepting their apices, tegulae and posterior half of pronotal tubercles reddish ochreous; first tergite excepting the extreme base, the whole of the second abdominal segment and the base of the third tergite, ferruginous; third-sixth ventral segments reddish brown. Anterior femora except at the base, the anterior tibiae and tarsi, the apex of the middle femora and the inner face of the middle tibiae, the middle tarsi and last four joints of posterior tarsi, ferruginous.

Pubescence very sparse everywhere, even on the face and clypeus, not hiding the sculpture; a dense patch only on the epinotum on each side of the insertion of the petiole; abdomen without any pruinose bloom. A few long whitish hairs on the clypeus, cheeks and lower surface of pronotum, otherwise without any pilosity.

Head microscopically and closely punctured, slightly shining, the clypeus more strongly punctured on its middle third, which is very shining. Pro- and mesonotum very strongly and transversely striate, the striae on the posterior part of the latter oblique; a sharply impressed median longitudinal line on the anterior half of the mesonotum; scutellum longitudinally striate, the postscutellum also, but reticulate at the sides; epinotum transversely reticulate-rugose and coriaceous between the rugae.

Head, seen from in front, nearly one-third wider than long, considerably wider than the thorax (Plate XI, fig. 24). The distance separating the posterior ocelli from the eyes is nearly twice as great as the distance between the ocelli;



inner margins of the eyes parallel or nearly so. A well-defined median impression extends from the level of the antennal sockets to the anterior ocellus. Clypeus scarcely produced beyond the face, its median area slightly tumid, emarginate in front. Third antennal joint rather long, as long as the fourth and fifth combined. Mandibles short and stout, the apical tooth short. Pronotum long, not more than twice as wide behind as long, its anterior face oblique and merging gradually into the dorsal, the anterior angles rounded. Dorsum of epinotum two and a half times longer than the declivity. Petiole rather short, barely longer than the thorax, its first joint a little longer than the second and as long as the posterior femur. Anterior metatarsi not markedly asymmetrical. Wings pale ochreous, the nervures and stigma dark brown; second cubital cell nearly twice as wide on the cubitus as on the radius, the third cubital cell widest in the middle, a little wider below than above, the third transverse cubital vein strongly convex outwardly.

♂. 15.5 mm. The inner face of the anterior femora except at the base, the anterior tibiae and base of metatarsi, the middle femora outwardly and below except at the base, the middle tibiae and the extreme base of the posterior femora red, the rest of the legs black. Third abdominal segment red at the base above, the ventral surface ferruginous except on the apical margin, otherwise coloured as in the ♀, but the first and second tergites are of a brighter red.

Clypeus and face below the antennal sockets clothed with a dense silvery pile; the pubescence on the thorax more apparent than in the ♀ but in no way hiding the sculpture. The latter similar to that of the ♀, but more delicate on the sides of the thorax. Head in front one-fourth wider than long, the inner orbits strongly convergent towards the clypeus, which is very little wider than long, only slightly produced beyond the face, and emarginate in the middle. Ocelli as in the ♀. Mandibles very short and stout. Pronotum longer than in the ♀, barely more than one and a half times wider than long. Otherwise like the ♀. Willowmore, C.P. (Dr H. Brauns).

*S. laticeps* n.sp. (figs. 8, 8 a, b).

♀. 16 mm. long. Mandibles excepting the black apex, anterior margin of the clypeus and the scapes, yellowish red, the rest of the head black. Prothorax ferruginous, the rest of the thorax black, but the scutellum and postscutellum have a dark reddish tinge at the sides. Tegulae reddish ochreous. First joint of the petiole black above, fusco-ferruginous below. The second joint of the petiole (first tergite), the whole of the second abdominal segment, the third sternite and basal two-thirds of the third tergite, ferruginous, the other abdominal segments black. Fore legs, including the coxae and trochanters, ferruginous; middle pair of legs ferruginous, with the coxae and trochanters above, and all the tarsi dark brown. Hind pair of legs black or very dark brown, the apical third of the femora below, and the tibiae on the outer face, ferruginous. Wings flavo-hyaline, the veins brown.

Clypeus and lower part of the face with a dense whitish pubescence. Lower outer margin of the mandible, the temples, prosterna and anterior femora with a row of long yellowish hairs. The mesopleurae and epinotum, excepting the median dorsal area, with a very short, decumbent and yellowish pubescence, scanty except on the declivity of the epinotum. Face, clypeus, vertex, occiput and temples microscopically reticulate and fairly dull, except the anterior half of the clypeus which is shining and has a few large punctures. Pronotal collar

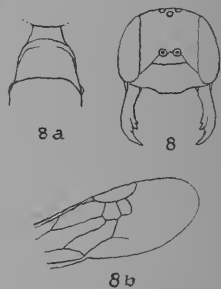


Fig. 8. *Sphex laticeps*, ♀.  
a. Pronotum. b. Fore-wing.

elongate, shaped like that of *S. Braunsi*, half as long as wide at the base, the anterior angles rounded, the anterior face merging into the dorsal by a low curve; dull, finely, closely and transversely striate, the sculpture much finer than in *Braunsi*. Mesonotum fairly dull, with a median longitudinal impressed line, finely and fairly closely transversely rugose, or striato-rugose. The scutellum closely and longitudinally striate, the striae a little divergent posteriorly. Metanotum dull, finely rugulose. Meso- and metapleurae, and sides of the epinotum dull, coriaceous, with a few feeble, oblique rugae. Median area of the epinotal dorsum dull, closely and transversely rugose, the rugae somewhat thinner than in *Braunsi*. Face and clypeus as in *Braunsi*, but the inner margins of the eyes are quite parallel. Head in front one-quarter wider than long. Posterior ocelli not quite twice as far from the eyes as they are from each other. Interocular distance on the vertex equal to the length of the first three joints of the flagellum. The second joint is two-thirds longer than the third joint. First joint of the petiole a trifle longer than the second. The second is not so slender as in *Braunsi*, being only four times as long as its apical width, whereas in *Braunsi* it is five times as long. Second tergite as long as wide at the apex. First and second abscissa of the radius of equal length, the third a little shorter.

Warmbad, Koakoveld, S.W. Africa. February, 1 ♀. Type in South African Museum.

*S. Peringueyi* n.sp. (figs. 9, 9 a, b).

♀. 25 mm. long. Mandibles ferruginous, the apical third black. Head and thorax black, the tegulae reddish ochreous. First joint of the petiole black, the second black above, ferruginous below. Second tergite, second-fifth sternites and sides of the third-fifth tergites ferruginous. The latter on the dorsal surface and the apical abdominal segment are black; the apical margins of the second-fifth tergites narrowly testaceous. Fore and middle coxae black above, ferruginous below. Fore and middle legs ferruginous, the femora with a black streak above. Hind legs, including the coxae and trochanters, black; the base of the tibiae and of the tarsal joints fusco-ferruginous. Wings hyaline, tinged with fuscous, the apical margin a little darker, the veins dark brown. Clypeus and lower half of the face with a white pubescence, intermixed with a white, outstanding pilosity. Pronotal tubercles, mesopleurae and mesosternum, and sides of the epinotum with a fine, whitish tomentum, intermixed with a few longer hairs. Abdomen with a very inconspicuous pruinose pubescence. Anterior half or more of the median area of the clypeus coarsely, fairly closely and shallowly punctured. Face dull, sparsely and finely punctured; a deeply impressed line extends from the anterior ocellus to the clypeus. Vertex and occiput almost dull, with a few widely scattered, small punctures. Temples shining and impunctate. Pronotum slightly shining, with a few small punctures on the collar. Mesonotum nearly dull, shallowly and sparsely punctured, the punctures not much larger than those of the face. At the sides near the tegulae and over the posterior fourth in the middle there is a trace of a feeble, transverse rugosity. Scutellum more strongly and more closely punctured than the mesonotum, impressed longitudinally in the middle. Metanotum sparsely punctured. The mesopleurae, metapleurae and sides of the epinotum are dull, closely and finely

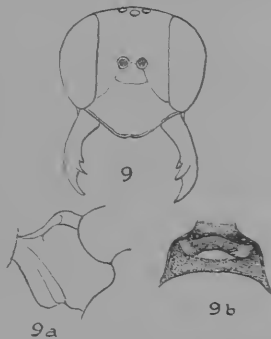


Fig. 9. *Sphex Peringueyi*, ♀, head. a. Pronotum profile. b. Dorsal view.

rugulose-punctate, here and there also coriaceous, the sculpture considerably obscured by the tomentum. Median area of the epinotal dorsum dull, closely and fairly finely rugose, the rugae transverse in the middle and oblique at the sides. The tori in front of the epinotal stigmata are of a cinnamon colour. Abdomen dull, without sculpture, except the last sternite which is moderately shining and sparsely, finely punctured. Clypeus fairly convex in the middle, the anterior margin narrowly depressed, transverse in the middle and oblique at the sides. Inner margins of the eyes almost parallel. Second joint of the flagellum two-thirds longer than the third. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum. Posterior ocelli almost as far from each other as they are from the eyes. Pronotal collar fairly long, only two and a half times wider than long in the middle. It is raised in the middle and excavated on each side of the middle, the excavation sloping forwards; viewed from above, it therefore appears bluntly trituberculate, the rounded shoulders forming the outer tubercles, and resembles to a certain extent the pronotal collar of *S. tuberculiscutis*. Mesonotum almost as long as wide in the middle. Median area of the epinotal dorsum nearly as long as the mesonotum. First and second joint of the petiole of equal length; the second tergite is four-fifths the length of the first, and a little more than one-third longer than wide at the apex. First abscissa of the radius a little longer than the second, the latter two and a quarter times longer than the third.

Tradouw Pass, Swellendam district, Cape Prov. November, 1 ♀. Type in South African Museum.

*S. egregia* Mocs. race *transvaalensis* Cam. (Plate X, figs. 4, 12; Plate XI, figs. 28, 41). *Ent. Nachr.* VII, p. 327, ♀, ♂. 1881. Cameron, *Ann. Trans. Mus.* II, p. 134, ♂. 1910.

race *promontorii* Kohl. Arnold, *Proc. Rhod. Sc. Assn.* p. 43. 1919-20.

♀. 27-33 mm. At first glance not unlike *vulcania* Du Buyss., and equalling it in size, but easily distinguished by having the dorsum of the pronotum smooth and rounded, not marginate and striate as in that species, and by the abdomen, which is without metallic lustre.

Black; the clypeus except the posterior margin, the first 5 or 6 joints of the antennae, the mandibles except the apical third, the pronotum, tegulae, anterior legs, middle legs excepting the inner sides of the coxae, trochanters and femora, dark ferruginous; posterior tarsi dark reddish brown. Clothed all over with a microscopic greyish pubescence, not hiding the sculpture; fourth, fifth, and sixth abdominal segments with a dense silvery pile, very conspicuous when seen at a certain angle. Cheeks, clypeus, mandibles, anterior femora and tibiae with long brownish hairs, thorax with a very scanty greyish pilosity on the sides and below, the face with fairly abundant greyish hairs intermixed with the longer brown ones. The whole body dull. Head sparingly and shallowly punctured, the vertex almost impunctate. Clypeus produced beyond the face, the produced portion convex, strongly punctured, its anterior margin straight and forming a sharp angle with the sides. Inner orbits almost parallel; posterior ocelli separated from each other by a slightly shorter distance than they are from the eyes.

Pronotum shallowly punctured, the dorsal surface convex from side to side and lengthwise, much shorter than the subvertical anterior face. Mesonotum finely and transversely rugoso-striate, the scutellum and post-scutellum longitudinally striate, coriaceous between the striae, dorsum of epinotum closely and fairly finely rugose, somewhat punctured and coriaceous between the rugae, sides of thorax coriaceous with a superficial rugosity superimposed.

Dorsum of epinotum submarginate, one and a half times as long as wide, three times longer than the declivity, which it joins in an obtuse angle. First joint of petiole a trifle longer than the second, as long as the posterior femur. Second tergite twice as long as wide behind. Wings brownish, darker near the base and along the costa, with a faint violaceous shimmer; third cubital cell twice as wide on the cubitus as on the radius, the third transverse cubital vein curved. Pulvilli well developed, the anterior metatarsus moderately asymmetrical.

♂. 27 mm. Colour as in the ♀, but as a rule only the first two antennal joints are entirely red, the third to fifth being more or less black above. Sculpture as in the ♀ but finer, except on the upper face and clypeus where the puncturation is stronger than in the other sex; pubescence and pilosity more abundant and longer, especially on the posterior half of the epinotum; the last four abdominal segments with a dense, shining and silvery-grey pile, completely hiding the ground colour. Face and clypeus densely clothed with silvery-golden pubescence which becomes thinner towards the vertex. Head in front very little wider than long, the inner orbits moderately convergent below. Clypeus long, a little longer than wide, much produced beyond the face, the produced portion being nearly one-third of its total length, shaped as in the ♀. The posterior ocelli are separated from each other by a little shorter distance than they are from the eyes. Otherwise like the ♀.

S. Rhodesia, Natal, Cape Province and Transvaal. Moderately common. Its prey is usually a large greyish noctuid caterpillar.

race *litoralis* Arnold. *Proc. Rhod. Sc. Assn.* XVIII, part 2, p. 45, ♀, ♂. 1919-20.

♀. 27 mm. A coastal form of *egregia*, from which it differs mainly in colour and sculpture.

Black, first two or three antennal joints, anterior half of the clypeus and basal two-thirds of the mandibles, the front and middle pair of legs excepting the coxae and trochanters at their base posteriorly, the base and apical third of the posterior femora, the posterior tibiae and tarsi, the second joint of the petiole excepting a median longitudinal streak of black above, the second abdominal segment and basal half of the third, bright red. The pronotum with a narrow band on the dorsum widening at each side, and the tegulae, dark red. Distribution of pubescence and pilosity on the head and thorax like that of the type of the species, but a little longer and more whitish, the pilosity on the head yellowish grey, not brown. The last four abdominal segments with a thin pruinose pubescence, not silvery and much less apparent than in *egregia-transvaalensis*. Face rugulose and more strongly punctured than in the type of the species, and the clypeus more sparingly and more delicately punctured. Otherwise the sculpture elsewhere is like that of *egregia-transvaalensis*, but a little finer. Shape of the head and clypeus as in *egregia-transvaalensis*. Dorsal face of pronotum shorter. Wings tinged with ochreous and with a faint violaceous shimmer on the apical third; veins, costal margin and stigma yellowish brown. Venation and shape of the cubital cells exactly like those of the type species.

♂. 27 mm. This differs from the type of the species as follows:

Legs bright ferruginous with black markings as follows, the basal half of the anterior coxae, the basal half of the middle coxae, a dorsal stripe on the middle trochanters and femora, the whole of the posterior coxae, trochanters and femora, except the outer apical fourth of the latter. Claws and pulvilli black. First joint of antenna dark ferruginous, the rest black. On the pronotum the red colour is confined to a spot on each side. The pilosity, especially on the sides of the thorax, is a little longer than in the type species. Ventral

surface of first tergite, the second segment except a longitudinal median streak of black above, the third segment on its basal third, red; the remaining segments black and covered with a sparse greyish pubescence. The puncturation of the pronotum is slightly stronger. Otherwise like the type of the species.

The coastal region of the Eastern Cape Province. (Brauns, O'Neil.) Types in the Rhodesia Museum.

At first glance this insect appears to be very different from *egregia-transvaalensis*, but the differences are superficial, affecting chiefly the colour. The amount of red on the legs is rather variable, but is always of a bright brick red. In the ♀ the clypeus may sometimes be entirely black, and also the pronotum, except for a small spot on each side.

A form intermediate between this race and race *transvaalensis* Kohl, from Pinetown, Natal (Transvaal Museum coll.), has the wing dark as in *transvaalensis*, but the first and third tergites are more or less red, and the pubescence on the abdomen less pronounced.

*S. dolichocephala* Cameron (Plate X, figs. 13-16; Plate XI, figs. 26, 31). *Ann. Trans. Mus.* II, p. 135, ♂. 1910. Arnold, *Proc. Rhod. Sc. Asscn.* XVIII, part 2, p. 46, ♀. 1919-20.

♀. 24 mm. Black, mandibles excepting the tips, anterior and middle tibiae, tarsi and apical half or so of the inner and lower surfaces of the femora, basal half of the hind tibiae, second, third and fourth joints of the hind tarsus, ferruginous. First joint of petiole black, the second joint excepting a black median streak above, and the second tergite and sternite, bright brick red; the ventral surface of the third-fifth segments brownish red. Abdomen without any metallic lustre. Face, cheeks and clypeus with a dense silvery pubescence, often rubbed off the anterior half of the clypeus through wear; vertex and occiput sparingly pubescent. Thorax with a dense silvery-grey tomentum, more or less hiding the sculpture in fresh specimens. In addition there is a whitish pilosity on the cheeks and sides of the thorax, on the latter somewhat sparse. The anterior tibiae have a fringe of long whitish hairs. Head dull, microscopically and closely punctured, the anterior half of the clypeus moderately shining and very coarsely rugoso-punctate.

In fresh specimens the sculpture of the thorax is hidden by the tomentum, but in worn specimens the pronotum is seen to be very finely and closely punctured, slightly shining, the mesonotum rugulose and punctate and with a few larger punctures here and there and some feeble transverse striae which are stronger on the posterior half; a deep median longitudinal impression extends from the anterior margin of the mesonotum to its middle. Scutellum and postscutellum closely and longitudinally striate, but with a shallow median longitudinal impression. Epinotum transversely rugulose above, sides of thorax rugoso-striate and punctate. Legs and abdomen with a pruinose pubescence which is not sufficiently dense to hide the colour of the integument.

Head, seen from in front, as wide as, or a trifle wider than long, feebly convex above, the inner margins of the eyes slightly convergent towards the vertex; clypeus moderately produced beyond the face, not much wider than long, the anterior margin convex, occasionally with a feeble indentation in the middle. The distance between the posterior ocelli almost as great as their distance from the eyes. Third antennal joint nearly as long as the fourth and fifth combined. Pronotum, excluding the neck, nearly two and a half times wider behind than long, the dorsum slightly gibbous in the middle and the anterior face feebly concave on each side of the middle; this gives the segment a subtuberculate appearance when seen in profile. Dorsum of epinotum convex transversely, the usual scutiform area not marginate but

indicated merely by a depressed line, within which the tomentum is sparser. The joints of the petiole of equal length, each a little shorter than the posterior femur, second tergite two-thirds longer than wide behind. Wings tinged with fuscous, a slight violaceous shimmer on the apical area, the veins dark brown; third cubital cell considerably narrowed above, nearly three times wider on the cubitus than on the radius, the third transverse cubital vein curved inwards from a point a little above its junction with the cubitus. Anterior metatarsi plainly asymmetrical, pulvilli present.

♂. 24 mm. Pronotum with a transverse red band which may be reduced in varying degree so as to leave only a red spot in the middle, or one on each side, or it may be entirely obsolete. Legs of a brighter red than in the ♀, second tergite usually with a median longitudinal black streak. Pubescence on face and clypeus bright silvery, more abundant than in the ♀. Pilosity of the cheeks more abundant, the tomentum on the thorax denser, the pubescence on the last four abdominal segments much denser than in the ♀ and forming a silvery pile which partially hides the ground colour. Otherwise colour, sculpture and pubescence as in the ♀.

Head in front one-fifth longer than wide, the inner margins of the eyes almost parallel, only slightly convergent below, clypeus triangularly produced beyond the face, the produced area being about as long as the part within the face, the apex angularly excised and with a depression behind it; a longitudinal carina runs from the middle of the depression to the angle of the apical excision. Distance between the posterior ocelli equal to their distance from the eyes. Pronotum similar to that of the ♀, but less conical when seen in profile, the anterior face being hardly excavated on each side of the middle. Seventh tergite with a median carina or tubercle somewhat widened at the base. The structure of the genital armature is quite distinctive, and unlike that of any of our other species. The stipites are thick throughout, incurved posteriorly, the inner face of the incurved area excavated, the upper margin of which ends in a stout tooth, and the lower margin fringed with numerous short and stout spines placed close together (Plate XI, figs. 31 *a* and *b*).

Willowmore, C.P. (Brauns); Pretoria (Janse). Kaross, S.W. Africa.

In specimens from Kaross, S.W. Africa, the pronotum is red, or at least the conical protuberance is partially red.

*S. conifera* Arnold (Plate XI, figs. 29, 30). *Proc. Rhod. Sc. Assn.* XVIII, part 2, p. 47, ♀, ♂. 1919-20.

Allied to *dolichocephala* but smaller, and having the same colour, pubescence and sculpture, and with the red colour on the pronotum equally variable. It differs from that species as follows:

♀. 20-22 mm. Mesonotum more strongly punctured between the striae than in *dolichocephala*. Head usually wider than in that species, about one-fifth wider than long; inner orbits parallel, not convergent above, if anything slightly divergent. Pronotum, seen from the side, narrower above and more compressed laterally, thereby appearing subconical, the anterior face steeper. In all the specimens before me, at least the last two ventral abdominal segments are black, sometimes the last three. Venation as in *dolichocephala*.

♂. 19.5-22 mm. Face and vertex slightly shining, with large and shallow punctures. Pro- and mesonotum more distinctly punctured than in *dolichocephala*. Head not so long, barely longer than wide; the clypeus, which is shaped like that of *dolichocephala*, being less produced in front, the portion beyond the face distinctly shorter than the portion within it. In addition, the anterior margin of the clypeus is not excised but transverse, and the median longitudinal carina is absent. Pronotum a little less conical than in

the ♀, but nevertheless more so than in *dolichocephala* ♂. This feature is more clearly appreciated when the segment is viewed from in front. The chief difference between the two species lies in the shape of the stipites and of the seventh tergite. The latter lacks the triangular tubercle or carina. The stipites are not equally thick throughout, but are abruptly narrowed at the posterior fourth, thence laminate, incurved and ending in a truncated point, without spines or teeth. (Plate XI, figs. 30 *a* and *b*.)

Willowmore, C.P. (Brauns); Bulawayo. Sawmills and Victoria Falls, S.R. Types in the Rhodesia Museum.

*S. dolichodera* Kohl (Plate XI, figs. 32–34). *Verh. Zool. Bot. Ges. Wien*, xxxiii, p. 383, ♂. 1883.

*S. pulchricollis* Cameron. *Ann. Trans. Mus.* II, p. 133. 1910.

♀. 22–26 mm. Black, mandibles except the apical tooth, first two joints of the antennae, pronotum, propleurae more or less, tegulae and second abdominal segment, red. Legs red, the anterior femora with a black streak on the basal half above, the middle femora with a black streak above which reaches from the base to beyond the middle; the posterior legs, except the apex of the femora, black.

Petiole more or less red, the first joint blackish at the sides, the second joint black above over the basal fourth. A very slight metallic lustre on the last four abdominal segments is sometimes visible; the apical ventral valve reddish. Cheeks and thorax with a dense silvery tomentum, which is, however, very sparse on the pro- and mesonotum. Face and clypeus with dense silvery pubescence.

Legs and abdomen finely pruinose. Cheeks, clypeus, mandibles and lower edge of propleurae with a few long whitish hairs.

Head and pronotum dull, without any large punctures. Mesonotum transversely striate, scutellum longitudinally striate and rugulose between the striae; postscutellum and sides of thorax rugulose, dorsum of epinotum more or less transversely and feebly rugose.

Head, seen from in front, about one-fifth wider than long, the inner orbits almost parallel, barely convergent above; clypeus very little produced beyond the face, its anterior margin convex; the distance between the posterior ocelli a little less than their distance from the eyes. Pronotum fairly long, only one and a half times wider behind than long, convex transversely, slightly flattened in the middle above and feebly impressed in the middle at the base, curving gradually downwards in front. Mesonotum with a well-defined median longitudinal line. Dorsum of epinotum two and a half times as long as the declivity, their junction obtusely angular. First joint of petiole as long as the second, and as long as the posterior femora. Anterior metatarsus moderately asymmetrical, its terminal spur black. Wings tinged with yellow, veins blackish. The third transverse cubital vein strongly convex outwardly, the second nearly straight, the first sigmoid; the third cubital cell is one and a half times wider on the cubitus than on the radius, and the width of the second cubital cell on the radius is twice that of the third.

The type of Cameron's *pulchricollis* is a female, and not a male as stated in his description. According to Mr Rowland Turner, Cameron's species is synonymous with Kohl's.

♂. 17–20 mm. long. Legs black, with the inner side of the fore tibiae and femora ferruginous or fusco-ferruginous; the apex of the middle femora and basal half of the middle and hind tibiae fusco-ferruginous. The pronotum is sometimes entirely black. Abdomen black, the petiole and second tergite brownish red, the first joint of the petiole sometimes black. Costa dark brown. Sculpture weaker than in the ♀. The head is considerably narrowed

behind the eyes. Second joint of the flagellum as long as the first and third united. Eyes convergent below, the interocular distance across the clypeus equal to the length of the first and second joints of the flagellum, and across the vertex equal to about the length of the first three joints of the flagellum. Petiole very long and slender, nearly twice as long as the thorax. Otherwise like the ♀.

The Rhodesian specimens are usually smaller than those from the Transvaal and Orange Free State, and the red colour is a good deal darker.

Transvaal and Orange Free State (Dr H. Brauns); Sawmills and Victoria Falls, S.R.

*S. bonae-spei* Lep. (Plate XI, fig. 36). *Hist. Nat. Ins. Hymen.* III, p. 382, ♀, ♂. 1845.

♀. 18–20 mm. Black, mandibles except the apical tooth, tegulae, first joint of petiole at the extreme base and apex, second joint at the sides and below, second abdominal segment (except a narrow median longitudinal streak of black on the upper surface, sometimes absent), third dorsal segment at the base, red. First two pairs of legs red, the coxae black at the base posteriorly, the trochanters and femora with a black streak above; posterior femora at the base and apex, the tibiae externally, and the tarsi, red.

Face, clypeus and cheeks with a dense silvery pubescence, the vertex and occiput sparsely pubescent; thorax with a silvery-grey tomentum, sparse and thin above, dense and hiding the sculpture on the sides. Abdomen and legs with a thin pruinose pubescence.

Pilosity on the head and thorax whitish. Head and thorax, excepting the middle of the pronotum above, dull. The head sparingly punctured on the upper part of the face, the punctures small and shallow, the clypeus sparsely but more coarsely punctured. Mesonotum and dorsum of epinotum finely and transversely striate, the scutellum longitudinally so, the postscutellum rugulose, the sides of the thorax rugoso-punctate.

Head in front one-fourth wider than long, the inner margins of the eyes subparallel, very feebly convergent above. Clypeus moderately produced beyond the face, the anterior margin transverse. Posterior ocelli a little nearer to each other than they are to the eyes. Pronotum very convex transversely, moderately so lengthwise, the dorsal face merging gradually into the anterior, feebly impressed lengthwise in the middle near the base. Epinotum convex transversely, without a clearly defined scutate area, the declivity short and oblique. The joints of the petiole of equal length. Second cubital cell trapezoidal, about one-fourth wider on the cubitus than on the radius, the second abscissa of the radius longer than the first, and at least three and a half times longer than the third; third cubital cell almost triangular, owing to the third transverse cubital vein curving inwards so far as to touch or almost touch the second; when not touching, the cell is never more than one-fourth as wide on the radius as on the cubitus.

♂. 17–19 mm. Colour as in the ♀, but with the black on the legs and the red on the second abdominal segment more extensive. Pubescence and tomentum as in the ♀, but the pilosity is longer and denser.

Face and vertex more strongly punctured than in the ♀. The pronotum is sparsely and fairly distinctly punctured. The sculpture of the rest of the thorax like that of the ♀, but a little coarser, the mesonotum clearly punctured between the striae.

Head in front one-fourth wider than long, the inner margins of the eyes strongly convergent below, the distance between them across the clypeus being only half as great as across the vertex. Otherwise like the ♀.

Willowmore, and Cape Province generally.



var. *ferrugineipes* Lep. (Plate XI, figs. 35, 37, 38). *Hist. Nat. Ins. Hymen.* III, p. 383. 1845. Gerstaecker, Peters: *Reise n. Mossamb.* v, p. 481, ♀, ♂. 1862.

*S. erythrospila* Cameron. *Ann. Albany Mus.* I, p. 303, ♂. 1905.

*S. dunbrodyensis* Cameron. *Ibid.* p. 322, ♂. 1905.

This variety is very variable in size and colour, and differs from the type of the species chiefly in colour and the amount of tomentum.

♀. 19–22 mm. Black, anterior margin of the clypeus, mandibles except at the apex, scapes, dorsum of pronotum more or less, pronotal tubercles, tegulae, a more or less quadrate spot under the tegulae, the greater part of the meso- and metapleurae, a semi-elliptical streak on each side of and within the scutate area of the epinotum, ferruginous. Petiole reddish underneath, the ventral surface of the abdomen and the second and third tergites red. Front and middle legs red, with more or less black on the trochanters and femora; the hind legs, excepting the outer side of the tibiae, and the tarsi, mostly black. The extent of the red on the sides of the thorax and on the second and third tergites is very variable. On the second tergite the brighter colour is often reddish brown, and confined to the apical third or fourth of the segment; the third tergite frequently has a median blackish streak extending from the base to the middle or beyond it, or it may be dark brown or black with only a trace of red at the sides. The specimens from the inland parts of the subcontinent and from Natal have usually less red than those from the Cape Province.

Head with a fine greyish-white pubescence, sparse and inconspicuous on the vertex and upper part of the face; the lower part of the latter, the cheeks and clypeus with a silvery and dense pubescence. Thorax with very short tomentum, greyish silvery, abdomen and legs with a pruinose pubescence. The sculpture of the thorax is similar to that of the type of the species, but the pro- and mesonotum are more distinctly punctured.

Head in front one-fourth wider than long, the vertex very feebly convex transversely, the inner margins of the eyes nearly parallel, the posterior ocelli a little more distant from the eyes than they are from each other. Clypeus produced very little beyond the face, the anterior margin of the median area transverse. Scutate area of the epinotum distinctly defined and marginate. The joints of the petiole subequal.

♂. 16–24 mm. Tomentum on the thorax more abundant than in the ♀, pubescence on the face longer and denser, varying in colour from golden to silvery. The red colour of the abdomen is darker, more brownish red as a rule and less extensive, on the second tergite usually confined to the apical third and on the third tergite (which may be entirely black) confined to a spot on each side. First joint of antennae often entirely black or nearly so. Otherwise like the ♀ in colour, pubescence and sculpture.

Head in front not quite one-fourth wider than long, inner margins of the eyes convergent below, the distance between them on the vertex being two-thirds greater than across the anterior margin of the face.

The clypeus projects but little beyond the face, its anterior margin feebly concave or straight. Posterior ocelli slightly closer to each other than they are to the eyes.

Common all over the subcontinent.

A very large number of this variety has been examined, and it does not seem possible to maintain its former status as a distinct species. The genitalia show a slight difference (figs. 35 and 36), the stipites narrowing somewhat more abruptly than in *bonae-spei*. Otherwise the differences are chiefly a matter of colour and pilosity. In the type of the species the sides of the thorax

are never marked with red, and the pilosity is longer and more silvery. On the other hand, the variety is usually more strongly punctured on the pronotum and mesonotum.

*S. punctaticeps* Arnold (Plate XI, fig. 39). *Proc. Rhod. Sc. Asscn.* XVIII, part 2, p. 52, ♀, ♂. 1919-20.

A species closely allied to *bonae-spei*, but larger and differing in the sculpture in both sexes, and in the ♂ in the form of the genitalia.

♀. 21-23 mm. Scapes black or entirely red. Front and middle pairs of legs entirely red, the pronotum either entirely black or with the posterior half bright ferruginous. Otherwise like *bonae-spei* in colour, pilosity and pubescence. It differs from that species in having the whole of the face, the vertex excepting the ocellar area, and the anterior half of the clypeus fairly closely punctured with large and moderately deep punctures. Pronotum nitidulous, distinctly punctured, the punctures as large as, but less plentiful than on the face. Mesonotum indistinctly rugose transversely on the disc, more strongly rugose at the lateral margins in front, deeply and coarsely punctured between the rugae. Scutellum and postscutellum strongly and closely punctured. Dorsum of epinotum reticulate-punctate, without indications of the transverse rugosity present in *bonae-spei*. Sides of thorax rugulose and punctate, the sculpture usually hidden by the dense silvery tomentum, which is densest on the posterior half of the mesopleurae. Wings with a distinct apical infuscation. The third transverse cubital vein curved upwards and inwards towards the second but always separated from it on the radius by a space at least one-third as long (frequently half as long) as the second abscissa of the radius. In *bonae-spei* the third transverse cubital vein usually meets the second on the radius. Otherwise like the ♀ of *bonae-spei*.

♂. 22-23.5 mm. Pilosity and pubescence longer and more abundant than in the ♀, the pubescence on the face and the tomentum of the mesopleurae golden-silvery, longer than in the ♀. Anterior and middle pairs of legs, excepting the inner surface of the coxae, entirely ferruginous. Sculpture as in the ♀. Shape of the head and degree of convergence of the inner margins of the eyes as in *bonae-spei* ♂.

Stipites of the genital armature long and narrow, but shorter than the exceptionally long inner paramera (sagittae), narrowed abruptly a short distance beyond the middle, thence sharply curved inwards and ending in a round point. This narrow apical portion or lamina of the stipes is nearly as long as the basal part, and much longer than in *bonae-spei* or in any of our other species.

Salisbury and Shiloh, S.R.; Shiluvane, Transvaal (Junod); Algoa Bay (Brauns); S.W. Africa.

*S. propinqua* Tasch. *Zeitschr. f. d. ges. Naturw.* xxxiv, p. 433, ♂. 1869. Kohl, *Ann. K.K.N.H. Mus. Wien*, xxi, p. 363, ♀, ♂. 1906.

"18-26 mm. long (♂ 18-25 mm., ♀ 20-26 mm.). Black, and also to a variable degree bright ferruginous or dark blood-red in parts. In lighter examples the following parts are red: mandibles excepting the apex, the anterior half of the clypeus, the labrum, base of the antennae, the pronotal collar to a greater or lesser extent, and sometimes, although rarely, the rest of the thorax, the abdomen excepting the last two or three segments which are black and without metallic lustre, and the whole of the legs. Often the upper side of the middle and hind femora, or only of the latter, is streaked longitudinally with black. In darker specimens, the two joints of the petiole

are blackish above, often only the second joint. The first joint is only rarely entirely black. Head and thorax with whitish pubescence, often sufficiently dense to obscure the sculpture to a certain extent. Epimera of the meso- and metapleurae pubescent... Last two tergites with a pruinose pubescence.

♀. The inner margins of the eyes are parallel; across the clypeus the distance between them is equal to the length of the second and third joints of the flagellum, plus half of the first joint. Clypeus a little wider than long, the anterior margin transverse in the middle, its lateral angles moderately rounded, not rectangular. Mesonotum transversely rugose, punctured between the rugae. Meso- and metapleurae moderately closely punctured and also somewhat indistinctly rugose. Dorsum of epinotum transversely rugoso-striate; the sides punctured and rugose. As a rule the sculpture of the pleurae is hidden by the pubescence, and for the same reason the episternal suture is not visible. The first joint of the petiole is not quite as long as the hind tibia, but is somewhat more than the first two joints of the hind tarsus... Pulvilli present.

♂. Smaller and more slender. The least distance between the eyes, which converge towards the clypeus, is equal to the length of the first and second joints of the flagellum. The first joint of the petiole is a little shorter than the hind tibia or the length of the first three joints of the hind tarsus."

Abyssinia. Also found in Syria, Egypt and Algeria.

*S. gracillima* Tasch. *Loc. cit.* p. 433, ♀. Kohl, *loc. cit.* pp. 323-5, ♀, ♂.

"14-20 mm. long (♂ 14-17 mm., ♀ 16-20 mm.). Slender. Black. Legs, head, thorax and abdomen bright ferruginous to a very variable degree. Often the whole insect is ferruginous, with the exception of the eyes and the apex of the mandibles. If present, the black colour of the apical abdominal segments usually shows a slight metallic lustre. Head, thorax, coxae and femora clothed with a white, silky pubescence, so that the sculpture is not visible all over, especially on the mesopleurae. Wings almost hyaline. Pronotal collar unusually long, bluntly conical, as long as wide in the middle, about as long as the second joint of the flagellum; like the mesonotum it has distinct transverse rugae. Mesonotum with a median longitudinal impression. Episternal suture absent. The coxae of the fore legs are articulated in a dish-shaped depression formed by the sternum and the mesopleurae; the depression is distinctly marginate, the margin being interrupted in the middle line of the sternum so that on each side of the excision there is a subdentate angle... Postscutellum raised in the middle. Epinotum finely rugose, with indications of longitudinal rugae which are somewhat divergent behind. The petiole is long, in conformity with the unusually slender shape of the insect; the two joints are of equal length, and united are longer than the slender hind tarsus. The first joint alone is only slightly shorter than the hind tibia, and usually somewhat longer than the first two joints of the hind tarsus (in the ♂ almost as long as the first three joints). The spines of the tarsal comb are very fine. The row of long hairs on the temples, sides of prosternum, the under side of the anterior trochanters, and on the under and upper side of the anterior femora are well developed in the ♀. Pulvillus present, claws unarmed... Third cubital cell distinctly large; the third transverse cubital vein is strongly arcuate outwardly.

♂. Agreeing with the ♀ in most characters. First and second joints of the flagellum united shorter than the third and fourth. The hind legs are sometimes entirely black. The last three abdominal segments are also black." Abyssinia.

*S. lukombensis* Cameron. *Ann. Soc. Ent. Belg.* LVI, p. 398, ♀. 1912.

"Black, the antennal scape, the greater part of the basal three joints of the flagellum, apex of clypeus, base of mandibles to the base of the teeth, occiput, outer eye-orbits, prothorax, except the base of pronotum and prosternum, mesopleurae from the tubercles to the apex, apex of metapleurae broadly, the coxae, more or less of the under side of the femora and the tibiae more or less broadly red; wings hyaline, the stigma and nervures black; the third abscissa of the radius one-fourth of the length of the second, broadly roundly curved, not converging much; the second obliquely bent outwardly behind. Mesonotum strongly, irregularly striated (but not closely) on the basal two-thirds; the metanotum more finely and closely striated. Scutellum irregularly, longitudinally striated. ♀. Length 21 mm.

Lukombe (Belgian Congo), October (A. Koller).

Densely covered with a white pile, the face and clypeus also with silvery hair. There is a short depression on either side of the apex of the clypeus making it appear almost trituberculate. Prothorax smooth. Postscutellum not striated, a stout keel down its centre. The third antennal joint is almost as long as the following two united. Tarsal spines black; there is a dense line of pale golden pubescence on the basal half of the metatarsus. The pubescence is dense, giving the insect a greyish appearance. The eyes converge very slightly above; the ocelli are in an equilateral triangle, and the hinder are separated from the eyes by a little greater distance than they are from each other."

Of the several species described by Cameron as new in Sjöstedt's *Kilimandjaro-Meru Exped.* VIII, pp. 264-8, 1910, I believe that the following identifications are correct:

*S. massaica* and *S. Sjöstedti* = *S. tenuis* Pal. Beauv.

*S. meruensis*, and very probably *S. curvistriata* = *ferrugineipes* Lep.

*S. longipilosella* = *S. Tydei* Guillou, var. *capensis* Lep.

To judge by the description I do not think that there can be any doubt that his *S. (Psammophila) cyanea* is not a *Sphex* at all, but is synonymous with *Sceliphron Sommereni* Turner. In that case the latter name should be retained, although published later than Cameron's, since *cyanea* is pre-occupied (*cyanea* Fab. = *Sceliphron coeruleum* Linn.).

STONE AGE CULTURES ON THE ZULULAND  
HIGHFELD AND IN NORTHERN NATAL

(Preliminary Report)

BY DR V. LEBZELTER

*(Inkamana—Vryheid)*

AND

F. K. O. BAYER

*Ntingwe—Krantzskop*

With 7 Plates

THE archaeology of the Zululand Highveld is undoubtedly obscure. The rugged nature of the hills and cliffs has been and is still an obstacle to complete archaeological knowledge of the country, but discovery of remains of older civilisation was to be expected. The history of the present work is as follows: Father Dr Küsters, O.S.B., a missionary, had at first, in the ordinary course of his duties, had his attention called by Mr G. W. Sutton to a rock shelter with bushman paintings on his farm on the Qudeni. Dr Küsters scientifically excavated this shelter. One of us (Bayer), having his curiosity whetted by a glimpse of Dr Küsters's specimens, took to searching the sandstone cliffs and ravines ('dongas') around Mangeni. During two years of exploration he found a large number of paintings and sites rich in artefacts. So numerous were the discoveries reported to Dr Küsters by Bayer, that the former (a specialist in ethnology) thought it necessary that an attempt should be made to have the finds made the subject of a properly constituted expedition under the leadership of an archaeologist. Dr Küsters was instrumental in arranging that our expedition should be undertaken under the leadership of Lebzelter with himself and Bayer as the other members.

Dr Küsters collaborated with us in working the sites at Umdutshane, Mangeni Waterfall, Isikwenene and the donga at Ezibisini. He then unfortunately returned home sick and was immediately afterwards called to Europe, so that we had to do without his help in our further work.

The sites worked by us from Mangeni come roughly within the following boundaries:—North: a portion of the Inxobongo River. East: Magogo Plateau and Nondweni River. South: Itala Mountain and Manyane River. West: Western slopes of Manxili Hill and the Hlazakazi Hill.

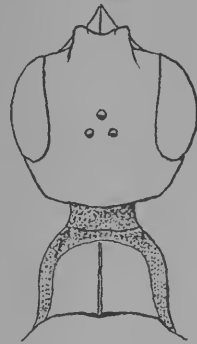
The formations immediately underlying the implement-containing strata are palaeozoic in character. The scenery of the region is characterised by a tremendous dislocation, combined with subsidences such as the one which is well shown by the Mangeni-Waterfall-Gorge of

PLATES VIII to XVII

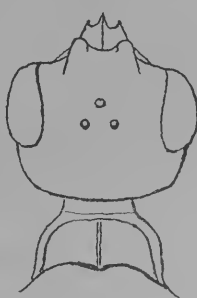
PLATE VIII

- Fig. 1. *Ampulex apicalis*, ♀, × 9.  
Fig. 2. *A. apicalis*, ♂, × 9.  
Fig. 3. *A. nebulosa*, ♀, × 16.  
Fig. 4. *A. mutilloides*, ♂, × 9.  
Fig. 5. *A. cyanura*, ♀, × 9.  
Fig. 6. *A. denticollis*, ♀, × 16.  
Fig. 7. *A. Arnoldi*, ♀, × 16.

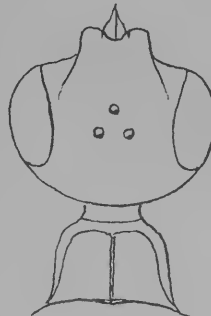
- Fig. 8. *A. nigrocoerulea*, ♂, × 9.  
Fig. 9. *A. nigrocoerulea*, ♀, × 9.  
Fig. 10. *A. spiloptera*, ♀, × 9.  
Fig. 11. *A. purpurea*, ♀, × 9.  
Fig. 12. *A. toroensis*, ♀, × 6.  
Fig. 13. *A. Crawshayi*, ♀, × 6.  
Fig. 14. *A. sibirica*, ♀, × 9.



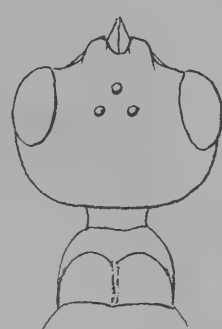
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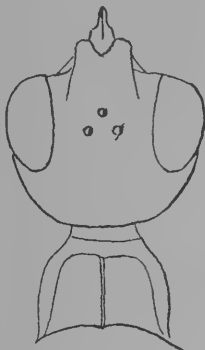
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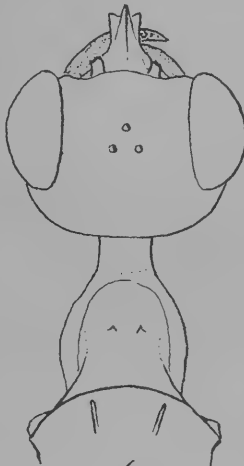
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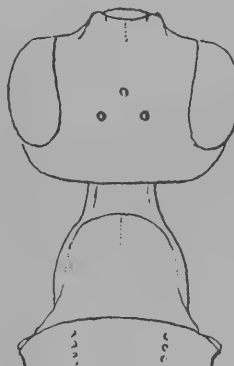
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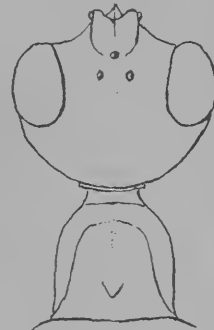
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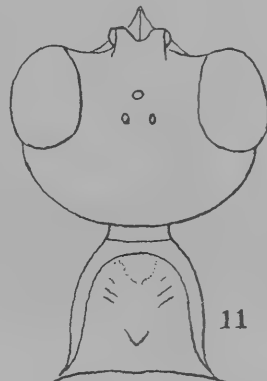
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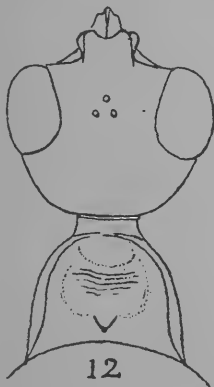
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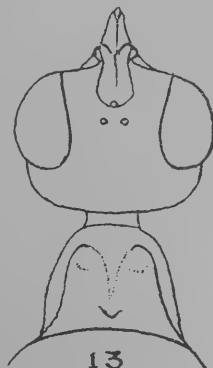
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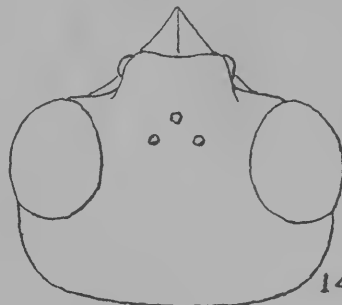
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PLATE IX.

Fig. 1. *Ampulex compressa* Fab. ♀ × 3.

Fig. 2. *Sceliphron tibiale* Fab. ♂ × 3.

Fig. 3. *Chlorion Paulinieri* Guérin, ♀ ×  $\frac{3}{2}$ .

Fig. 4. *Sphex* (*Parapsammophila*) *ludovicus* Smith, ♂ × 2.

Fig. 5. *Chlorion xanthocerus*, III. var. *instabilis* Smith, ♀ ×  $\frac{3}{2}$ .

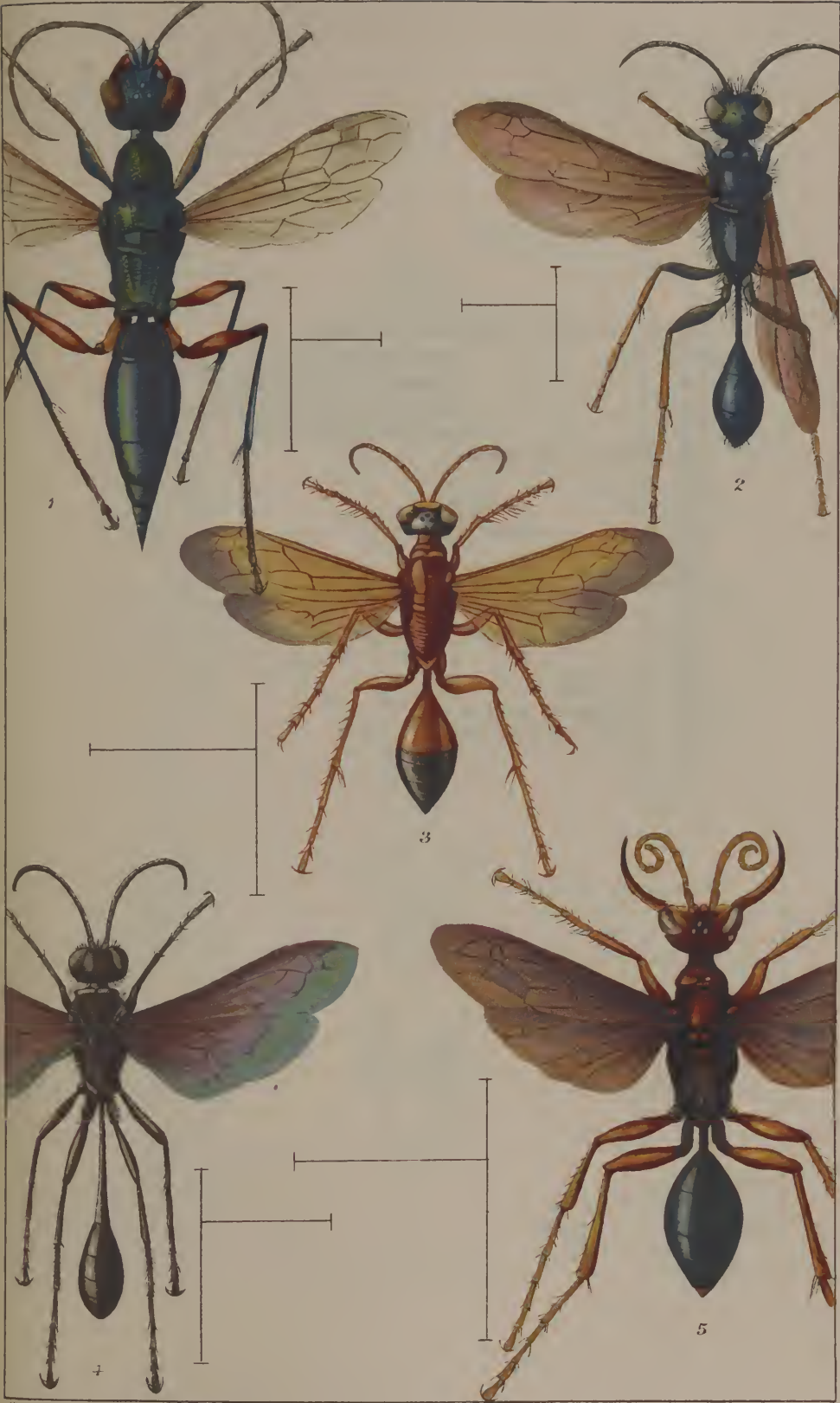
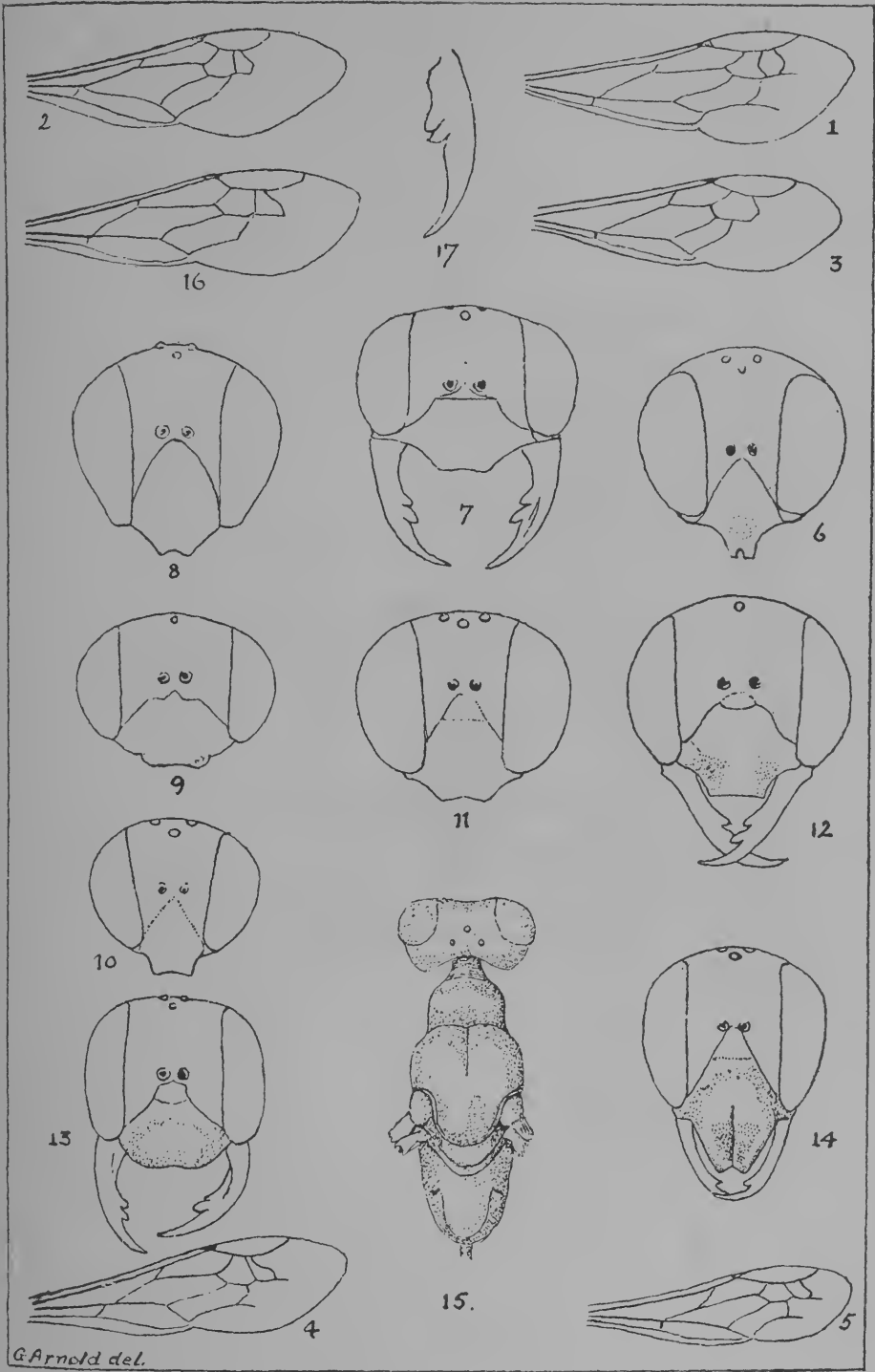


PLATE X

- Fig. 1. Anterior wing of *ludovicus* Smith  
 Fig. 2. „ „ *tydei-capensis* Lep.  
 Fig. 3. „ „ *Saussurei* Du Buysson  
 Fig. 4. „ „ *egregia-transvaalensis* Cam.  
 Fig. 5. „ „ *vulcania* Du Buysson.  
 Fig. 6. Head of *vulcania* ♂.  
 Fig. 7. „ „ „ ♀.  
 Fig. 8. „ „ *Saussurei* ♂.  
 Fig. 9. „ „ *tydei-capensis* ♀.  
 Fig. 10. „ „ „ ♂.  
 Fig. 11. „ „ *ludovicus* ♂.  
 Fig. 12. „ „ *egregia-transvaalensis* ♀.  
 Fig. 13. „ „ *dolichocephala* Cameron ♀.  
 Fig. 14. „ „ „ ♂.  
 Fig. 15. Thorax of „ ♂.  
 Fig. 16. Anterior wing of „  
 Fig. 17. Claw of *ludovicus* ♀.



G. Arnold del.

# PLATE XI

- Fig. 18. Head of *beniniensis*, var. *calvus* ♀.
- Fig. 19.     "      "      "      ♂.
- Fig. 20. Wing of     "      "
- Fig. 21.     "      *tenuis* Pal. Beauv.
- Fig. 22. Head of     "      ♀.
- Fig. 23.     "      "      ♂.
- Fig. 24. Head and thorax of *Braunsi* Turner ♀.
- Fig. 25. Wing of *Braunsi* Turner ♀.
- Fig. 26. Anterior half of thorax of *dolichocephala* ♀.
- Fig. 27. Head of *Braunsi* ♀.
- Fig. 28.     "      *egregia-transvaalensis* ♂.
- Fig. 29. Anterior half of thorax of *conifera* Arnold ♀.
- Fig. 30. *a* and *b* lateral and front view of stipes of *conifera* ♂.
- Fig. 31. *a* and *b*             "      "      *dolichocephala* ♂.
- Fig. 32. Thorax of *dolichodera* Kohl ♀.
- Fig. 33. Head of             "      "
- Fig. 34. Wing of             "      "
- Fig. 35. Genital armature of var. *ferrugineipes* Lep. ♂.
- Fig. 36.             "      *bonae-spei* Lep. ♂.
- Fig. 37. Head of *ferrugineipes* ♂.
- Fig. 38. Wing of             "
- Fig. 39. Left stipes of *punctaticeps* Arnold, seen from side and below.
- Fig. 40.             "      *beniniensis* Pal. Beauv.
- Fig. 41.             "      *egregia* Mocs., race *transvaalensis*.

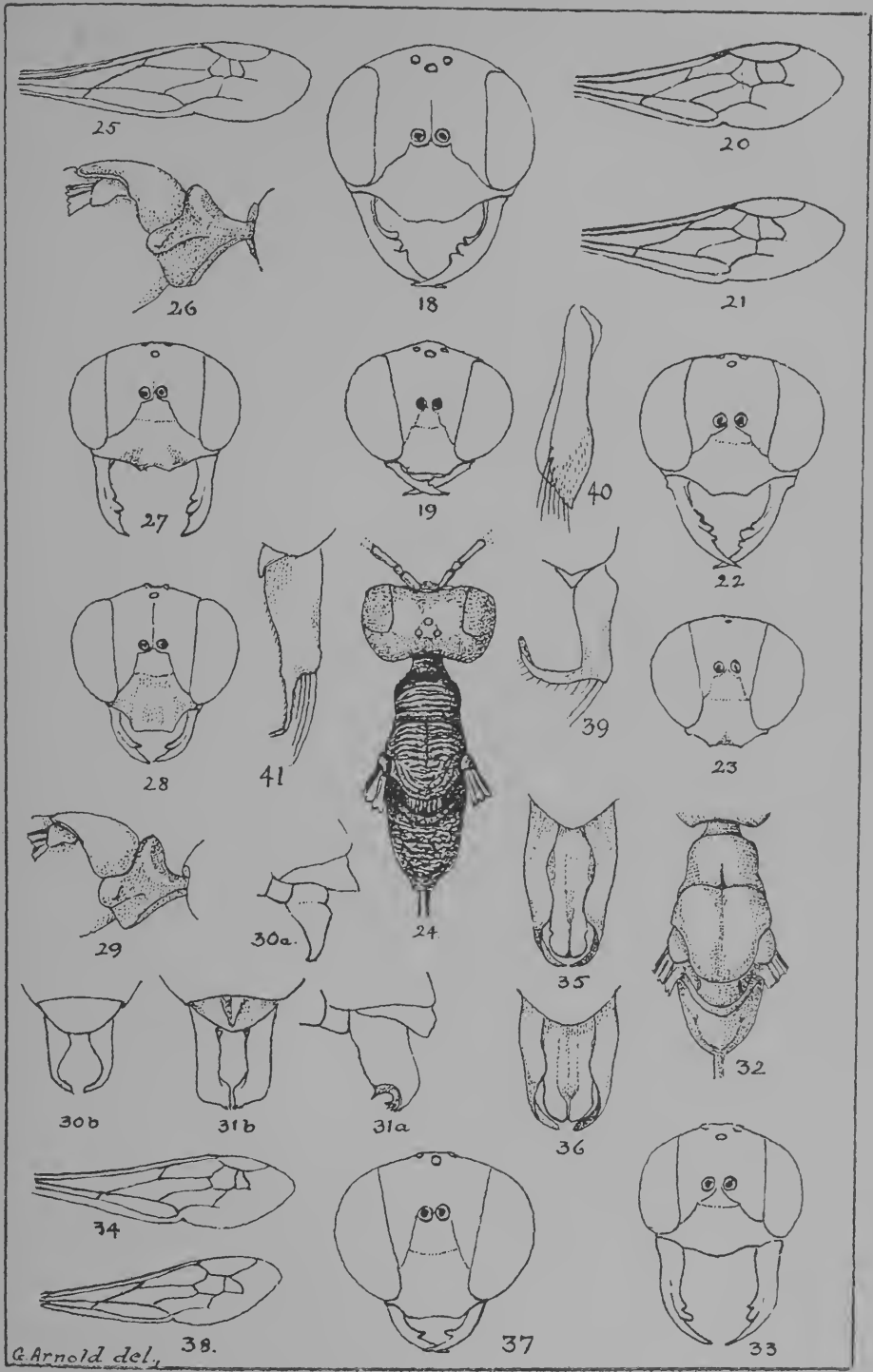


PLATE XII



*of the • van het*

# TRANSVAAL MUSEUM

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BIRDS AND MAMMALS FROM SOUTH-WEST AFRICA

By AUSTIN ROBERTS

SOME TRYPAEIDAE (DIPTERA) FROM SOUTH AFRICA IN THE  
TRANSVAAL MUSEUM

By the late Professor M. BEZZI

A NOTE ON THE SYSTEMATIC STATUS OF *TRIDACUS LOUNSBURYI* (COQ.)  
(TRYPETIDAE, DIPTERA)

By H. K. MUNRO

THE SPHEGIDAE OF SOUTH AFRICA. PART XI

By GEORGE ARNOLD, D.Sc., A.R.C.Sc., F.E.S.

OLD NEGRO SKULLS FROM CAVES IN THE NORTHERN TRANSVAAL

By Dr VIKTOR LEBZELTER

ANTHROPOLOGICAL OBSERVATIONS ON SOME STRANDLOOPER SKELETON  
REMAINS IN THE TRANSVAAL MUSEUM

By Dr VIKTOR LEBZELTER

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separated at their bases, but curve towards each other and become apposed apically. This appearance is similar to that found in species of *Dacus*, such as *D. vertebratus* Bez., which has also similar ratios for the lengths of the antennal joints compared with the eye length.

It would appear therefore that if the character of the antennae is to be made one reason for separating *lounsburyi* into a new genus, *sphaeristicus* could not well be included. At the same time the two species have undoubtedly such other strong characteristics in common that they should be placed together.

With regard to the wing-pattern, it may be remarked that the statements made by Bezzi about *lounsburyi* under *sphaeristicus* in his paper in the *Bulletin of Entomological Research*, VI, p. 91, are rather misleading. Bezzi seems to have seen fresh specimens at that time (see *lounsburyi*, l.c. p. 90), but it is possible that they were reared specimens that had not been allowed to harden and get their full coloration before being killed and pinned. In fresh caught specimens examined by the author the wing-pattern is as dark as in *sphaeristicus*, and is indeed so similar that the figure for the wing of *sphaeristicus* (l.c.) would do as well for that of *lounsburyi*. Further, Froggatt's figure mentioned by Bezzi (see Froggatt, *Report on Fruit-flies and other Pests in various countries*, 1909, Pl. III, fig. 10) gives quite an erroneous idea of the appearance of the wing of *lounsburyi*. The hyaline streak along the first posterior cell has no specific value whatever; an examination of numerous specimens both collected and reared of various species of *Tridacus* and *Dacus* in which there is a broad fuscous fore-border on the wing shows that similar hyaline streaks of a greater or lesser extent may be present on the wings of a small percentage. Among several specimens of *lounsburyi* only one shows this streak. Without doubt then Froggatt happened to have secured one such specimen from which he made his drawing.

## THE SPHEGIDAE OF SOUTH AFRICA

BY GEORGE ARNOLD, D.Sc., A.R.C.Sc., F.E.S.

*Curator of the Rhodesia Museum, Bulawayo*

## PART XI

With 20 Text-figures

Genus CHLORION Fab.

*Syst. Piez.* p. 217, 1804.*Sphex* Linn. *Syst. Nat.* Ed. 12, p. 941, 1770.

CHARACTERS. Inner margins of the eyes parallel, or slightly divergent above, more rarely convergent above. Mandibles with one to three teeth on the inner margin. Labrum well-developed. Tongue distinctly long. In the ♂ the joints of the flagellum have one or more longitudinal carinae below; the apical joint in both sexes is truncate at the apex. Pronotal collar discoid or fairly short, always considerably wider than long. Metapleurae produced far backwards as in the other genera of the Chlorion group. Episternal suture clearly defined. Epinotal dorsum without a distinctly defined median area, or with one which extends over practically the whole of it (subgenus *Chlorion* s.str.). The metapleural-epinotal suture is almost entirely obliterated, being defined only slightly above the hind coxae; in the subgenera *Chlorion* and *Proterosphex* there is a groove (stigma-groove), which extends from the end of the metapleural-epinotal suture to the epinotal stigma. Petiole one-jointed, formed by the sternite of the first abdominal segment; the first tergite is conical or campaniform. Pygidial area absent; in some species the apical tergite is compressed transversely. In the ♂ eight ventral plates are visible.

Middle coxae not inserted closely together. Tibiae and tarsi strongly spinose, the anterior tarsi in the ♀, except in the subgenus *Isodontia*, with a well-developed comb. Claws stout, armed with from one to five teeth at the base. Pulvillus present. The inner calcar of the hind tibia has either a close comb of fine hairs along the greater part of its length, or a close comb at the base and a row of separate spines on the apical half.

Fore wing: radial cell rounded at the apex. Three cubital cells present, only in a few American species with only two. The second cubital cell is either higher than wide on the cubitus, or rhomboidal, as wide as, or wider than high. The second and third cubital cells each receive one of the recurrent veins. The basal vein arises at the end of the first submedial cell, or a little beyond it, and meets the subcosta at a considerable distance from the pterostigma.

Hind wing: retinaculum unbroken, beginning at the base of the radial vein. The cubital vein arises at the apex of the submedial cell or a little beyond it. The submedial vein ends in the anal sinus.

Distribution: Both hemispheres.

These insects nest in the ground and provision their young with Orthoptera, chiefly grasshoppers and crickets. The species of the subgenus *Isodontia* are an exception to the rule and make their nests in hollow stems and reeds.

The genus was monographed by Kohl in the *Ann. K.K.N.H. Mus. Wien*, v, Heft 2 and 3, 1890, and therein the habits of several European and North American species are described very fully. In the work cited, and also in his later *Die Gattungen der Sphegiden*, Kohl with considerable justification treated the numerous genera of other authors as species-groups of the single genus *Chlorion* (*Sphecx*), but at the same time conceded that in a future subdivision of the genus some of these groups might be entitled to subgeneric rank. For convenience this step has been taken in this work, although it must be admitted that the differences between some of the subgenera are rather slight. The subgenera may be distinguished as follows:

#### KEY TO THE SUBGENERA OF *CHLORION*

- (8) 1. Second cubital cell narrow, higher than wide on the cubitus, sometimes (American species) fused with the first, owing to the obliteration of the first transverse cubital vein. (Nests made in the ground.)
- (3) 2. Claws with a single tooth at the base. Clypeus much wider than long. Epinotum with a stigma-groove. Stigmata of the first tergite (with only one exception) placed before the middle of the segment. Tarsal comb always well developed in the ♀. The body, especially the abdomen, often with a metallic lustre.  
subgenus *Chlorion* Fab. (*Syst. Piez.* p. 217, 1804)
- (2) 3. Claws with more than one tooth at the base; clypeus not very short, not more than twice as wide again as long in the middle, usually a good deal less.
- (7) 4. Claws with two teeth at the base; epinotum without a stigma-groove.
- (6) 5. Apical ventral valve in the ♀ transversely compressed. Fifth and sixth sternites in the ♂ covered with a fine, adpressed silky pubescence. Stigmata of the first tergite placed at, or behind, the middle of the segment. The apical half of the comb on the inner calcar of the hind tibia is composed of well-separated spines.  
subgenus *Calosphex* Kohl. (*Ann. K.K.N.H. Mus. Wien*, v, pp. 78 and 112, 1890)  
" *Palmodes* Kohl. (*Loc. cit.*)  
" *Pseudosphex* Tasch. (*Zeitschr. f. d. ges. Naturw.* xxxv, p. 420, 1869)  
(Of these three subgenera only the first is represented in Africa.)
- (5) 6. Apical ventral valve in the ♀ not transversely compressed. (Pronotal collar well developed, never linear above. In our African species the claws have only two teeth at the base, but in some American species as many as five may be present.)  
subgenus *Harpactopus* Smith. (*Cat. Hymen. B.M.* iv, p. 264, 1856)
- (4) 7. Claws with three or four teeth at the base.  
subgenus *Parasphex* Smith. (*Cat. Hymen. B.M.* iv, p. 267, 1856)
- (1) 8. Second cubital cell wider on the cubitus than high, rhomboidal or more or less rectangular. Claws with two teeth at the base. Comb of the inner calcar of the hind tibiae composed of closely set hairs.
- (10) 9. Petiole very long, at least two-thirds as long as the rest of the abdomen. Epinotum without a stigma-groove. Anterior tarsi without a distinct comb. (The abdomen in the ♂ usually has fimbriae of long hairs on some of the sternites. The nests are made in hollow stems or reeds, not in the ground.)  
subgenus *Isodontia* Patton. (*Boston Soc. N.H.* xx, p. 380, 1881)
- (9) 10. Petiole short, rarely much longer than the second joint of the hind tarsus. Epinotum with a stigma-groove. Anterior tarsi with a well-developed comb. (The nests are made in the ground.)  
subgenus *Proterosphex* Fernald. (*Proc. U.S. Nat. Mus.* xxxi, p. 294, 1907)

In the following pages the descriptions of those species which are not known to me in nature have been copied from Kohl's works. Some species, which seem to belong to the African portion of the Mediterranean subregion and its extension down the Nile valley, have been included in the key to the species, but have not otherwise been considered.

For determination of the species the measurement of the petiole is to be taken from the extreme base to the point where the first tergite joins it. Measurements of the length of the clypeus should include the ill-defined triangle in front of the antennal sockets, and the length should be measured from the anterior margin to the apex of that triangle. The latter is not a part of the clypeus, but throughout this work it has been treated as such and included in the measurements. In this genus the suture between it and the clypeus is usually very well defined, and for that reason the student is warned not to exclude it in measuring the clypeus. The width means the greatest width, which is always some distance behind the anterior margin, that is, just below the eyes.

The structure of the genitalia in the ♂ is of some importance, especially in the *haemorrhoidalis* Fab. group, in which, together with the shape of the apical tergite and sternite, it is indeed almost the only reliable distinctive character. It is, however, necessary to use this character with discretion, since not only are the genitalia very complicated in shape, but also because a great deal depends on their proper preparation for the microscope and on the angle from which they are viewed. Moreover, it must be borne in mind that a certain, although moderate, amount of variation is bound to occur in their structure, even within the species<sup>1</sup>.

In the natural position, the stipites or outer paramera enclose the greater part of the sagittae or inner paramera. The latter are placed above the laciniae or inner lobes of the outer paramera, so that when viewed from above the latter are not, or only partially visible. In preparing the genitalia for examination it is necessary to separate the outer paramera fairly far apart, and to raise the inner ones to a fairly high angle from the base whereby they may be viewed from the side. Since the structure of these organs is so complicated, it is exceedingly difficult to give a concise verbal description of them, and illustrations are therefore essential.

<sup>1</sup> Pérez (*Ann. Soc. Ent. France*, LXIII, pp. 64-81, 1894) has rightly emphasised this point in his paper on the male genitalia of the Hymenoptera and their taxonomic value, in which he says:

"Il n'est pas de caractère invariable, et l'organe copulateur n'est pas soustrait à la loi commune, par cela seul qu'il remplit un rôle dans une importante fonction. On peut même affirmer qu'il est plus sujet à variation que la plupart des autres organes. Cela ne peut surprendre, si l'on considère que c'est une machine fort compliquée, surchargée de saillies, de prolongements, d'appendices, de dents, de soies, de poils, etc. La complexité est toujours une condition éminemment favorable à la variation, . . . Que l'organe copulateur soit sujet à beaucoup varier dans une même espèce, c'est loin d'être un avantage, au point de vue de la zoologie pratique. C'en est un grand, au contraire, et une compensation très heureuse, qu'il diffère beaucoup d'une espèce à l'autre."

That a good deal also depends on the orientation of the different parts of the genitalia is also made apparent by Pérez, who reproduces the drawings made by four different authors of the genitalia of one and the same species. Two of these differ so much from the others that at first glance one would suppose they figured the genitalia of three distinct species.

KEY TO THE SPECIES OF *CHLORION* ♀♀.

- (6) 1. Pronotal collar deeply impressed above, and therefore bituberculate. Claws with only one tooth at the base. Clypeus much wider than long. Second cubital cell higher than wide on the cubitus.  
(subgenus *Chlorion* Fab., s.str.)
- (3) 2. Pronotal collar distinctly transversely striated in front. Mesopleurae slightly shining, moderately closely punctured. (Clypeus as long as the third joint of the flagellum, much shorter than the second, with five teeth on the anterior margin. Legs slender. Fore wing yellow, with a brown apical margin. Hind wing feebly infuscated on the apical and hind margins. Thorax black. Head, antennae and legs partially reddish. Abdomen black, with a violaceous metallic lustre. Dongola, Nubia.) *hirtum* Kohl
- (2) 3. Pronotal collar not distinctly transversely striated.
- (5) 4. Wings yellow, with brownish apical margin and without any metallic lustre. (Antennae, tibiae, tarsi, apical half or more of the femora, head, excepting the middle above, yellowish red; apex of abdomen fusco-ferruginous. Abdomen with a very distinct metallic blue lustre.)  
*xanthocercum* Ill., var. *apicalis* Guérin
- (4) 5. Wings blackish brown, with a metallic blue, violaceous or greenish lustre.  
*xanthocercum* Ill.
- There are also the following varieties:
- a. The whole body black, without any metallic lustre.  
var. *unicolor* Sauss.  
Abdomen, and the thorax more or less, with a dark blue or purple metallic lustre.
- b. Antennae and pilosity black. var. *kigonserana* Strand.
- c. Antennae yellow. var. *subcyaneum* Gerst.
- d. Antennae, clypeus, legs and apical abdominal segment more or less ferruginous. var. *maxillaris* Pal.
- e. Mandibles, antennae, head more or less, pronotum, tegulae, mesonotum in the middle, and the legs, ferruginous; apical segment of the abdomen ferruginous or reddish brown; wings brown, with a violaceous lustre; very large, 40 mm. long. var. *instabilis* Smith
- (1) 6. Claws with two to four teeth at the base. Pronotal collar with at the most only a shallow median impression above, not bituberculate.
- (24) 7. Second cubital cell higher than wide on the cubitus. (Epinotum without a stigma-groove. On the inner calcar of the hind tibiae the teeth of the comb are coarse and widely separated on the apical half. Stigma of the first tergite placed at or behind the middle of the segment.)
- (13) 8. Apical sternite not transversely compressed. Tergites black, without transverse yellow or white bands. (Claws with two teeth at the base. First tergite attached to the petiole at a steep angle, subvertical. Large species with long and powerful legs.) (subgenus *Harpactopus* Smith)
- (10) 9. Petiole longer than the second joint of the hind tarsus and about two-thirds as long as the first joint. Mesonotum and a transverse bar across the vertex covered with a dense silvery pubescence. Wings blackish brown, with greenish blue reflections. Femora of the hind legs longer than the tibiae by as much as one-fourth of the length of the basal joint of the hind tarsus. *funbris* Berland
- (9) 10. Petiole not longer than the second joint of the hind tarsus.
- (12) 11. Wings yellow, the apical margin brown. Clypeus with a small excision in the middle of the anterior margin. (Black; pilosity black, the face and sometimes also the collar with white pubescence. Labrum semi-circularly emarginate, with three small teeth at the apex of the arc. Petiole a little shorter than the second joint of the hind tarsus. Femora of the hind legs as long as the tibiae. 26-34 mm. long. Egypt, Nubia and Abyssinia.) *aegyptium* Lep.

- (11) 12. Wings brown, the apical margin beyond the cells fusco-hyaline on the front wing, and hyaline on the hind wing. Clypeus not excised in the middle. (Petiole about as long as the second joint of the hind tarsus. Femora of the hind legs as long as the tibiae. 25-32 mm. long.) *tyrannum* Smith.
- (8) 13. Apical sternite transversely compressed. Abdomen red or yellowish red, the tergites usually with transverse apical bands of yellow or white. Species not very large.
- (17) 14. Claws with two teeth at the base. Head and thorax covered with a dense, decumbent, snow-white or yellowish pubescence and a white pilosity, obscuring the sculpture. (subgenus *Calosphex* Kohl)
- (16) 15. Petiole as long as the basal joint of the hind tarsus. First and second transverse cubital veins clearly convergent towards the radius. 14-16 mm. long. (Khartoum.) *niveatum* Dufour.
- (15) 16. Petiole shorter than the basal joint of the hind tarsus. First and second transverse cubital veins barely convergent towards the radius. 20-27 mm. long. (Khartoum and Nubia.) *nigropectinatum* Tasch.
- (14) 17. Claws with three or four teeth at the base. Head and thorax with a long whitish pilosity and white pubescence, the latter not so dense as to obscure the sculpture. (subgenus *Parasphex* Smith)
- (19) 18. Medium sized species, 18-24 mm. Thorax and epinotum with white pubescence and pilosity, very dense on the sides and declivity of the epinotum. Tergites without white bands, the apical margins only testaceous. *viduatum* Christ.
- (18) 19. Small species, 13-17 mm. long.
- (23) 20. Tergites with narrow apical ivory-white bands; clays with three teeth at the base; pubescence of the thorax not very dense.
- (22) 21. Dorsum of epinotum dull, transversely rugulose or striate, with numerous fine punctures between the striae. *albisectum* Lep.
- (21) 22. Dorsum of epinotum shining, very sparsely and very finely punctured, with a narrow median longitudinal area which is transversely striate and duller than the rest of the dorsum. *albisectum*, race *marginatum* Smith
- (20) 23. Tergites without apical bands of ivory-white; claws with four teeth at the base; head and thorax covered with snow-white pubescence which entirely obscures the sculpture. (Cairo and Senegal.) *leucosoma* Kohl
- (7) 24. Second cubital cell at least as wide as high, more or less rhomboidal. Epinotum with or without a stigma-groove. The comb on the inner calcar of the hind tibia is composed of fine hairs set close together.
- (32) 25. Anterior tarsi spinose but without a true tarsal comb. Second cubital cell more or less rectangular, usually wider than high. (Claws with two teeth at the base. Dorsum of epinotum without a stigma-groove, usually densely punctured. Petiole distinctly long, at least two-thirds as long as the rest of the abdomen. Nests made in reeds and hollow stems, not in the ground.) (subgenus *Isodontia*)
- (29) 26. Pronotal collar linear above; dorsum of epinotum closely punctured, without indications of transverse striation.
- (28) 27. Wings brown, with a violaceous lustre. *pelopoeiformis* Dhlb.
- (27) 28. Wings hyaline, yellowish at the base and along the costa, the apical margin, radial cell and greater part of the 2nd and 3rd cubital cell pale fuscous. *pelopoeiformis* var. *longiventris* Sauss.
- (26) 29. Pronotal collar not linear above, about one-fifth as long as wide. Dorsum of the epinotum more or less transversely striated as well as punctured.
- (31) 30. First seven joints of the antennae, the legs excepting the posterior femora above, bright ferruginous; mesonotum dull, closely and strongly punctured; epinotum closely punctured and with a fine transverse striation superimposed. Wings flavo-hyaline, the apical margin narrowly pale fuscous. 21-25 mm. long. *Simoni* Du Buysson

- (30) 31. Antennae and greater part of the legs black; mesonotum shining, finely and sparsely punctured; epinotum finely, transversely striato-rugose and punctured between the striae. Wings pale fusco-hyaline, the apical margin fuscous. 18-22 mm. long. *Stanleyi* Kohl
- (25) 32. Anterior tarsi with a well-developed comb. Second cubital cell rhomboidal. Stigma-groove on the epinotum nearly always present. Claws with two teeth at the base. Petiole short, less than a quarter of the length of the rest of the abdomen, and rarely longer than the second joint of the hind tarsus. (subgenus *Proterosphex* Fernald)
- (34) 33. Dorsum of epinotum with five or six very prominent transverse rugae. *gorgon* Kohl
- (33) 34. Dorsum of epinotum finely sculptured, without very prominent rugae, or if a few rugae are moderately distinct then the scutellum is ferruginous.
- (36) 35. Scutellum, postscutellum, clypeus, pronotal collar and greater part of the legs ferruginous; dorsum of epinotum finely and closely transversely striate, with in addition seven or eight transverse rugae which are not very apparent unless the segment is viewed obliquely from in front. *rufiscutis* Turner
- (35) 36. Scutellum not ferruginous.
- (42) 37. Metanotum bituberculate in the middle.
- (39) 38. Epinotum with a dense and shaggy pale ochreous yellow pilosity, obscuring the sculpture. Clypeus with a dense, pale golden pubescence and a long pale yellow pilosity; posterior femora and tibiae red. *tuberculatum* Smith
- (38) 39. Pilosity on the epinotum not yellow. Posterior femora and tibiae black.
- (41) 40. Pilosity on the epinotum black, short and scanty, not obscuring the sculpture. *umbrosum* Christ. var. *metallicum* Tasch.
- (40) 41. Pilosity on the epinotum white, dense and long, obscuring the sculpture. *umbrosum* var. *lanatum* Mocs.
- (37) 42. Metanotum not bituberculate in the middle, at the most with only a feeble median longitudinal impression.
- (46) 43. Wings yellow.
- (45) 44. Wings flavo-hyaline, the apical margin beyond the cells pale fuscous. Apical segment of the abdomen fusco-ferruginous, the rest of the body, including the legs, entirely black. *luteipennis* Mocs.
- (44) 45. Wings dark yellow, the apical margin dark brown. Clypeus, first eight joints of the antennae, legs, thorax, first segment of the abdomen and basal two-thirds of the second segment, flavo-ferruginous (pale burnt sienna). *Paulinieri* Guérin
- (43) 46. Wings brown or blackish brown, with metallic reflections.
- (48) 47. Epinotum and sides of the thorax with a dense, pale golden pubescence and a long, pale yellow pilosity, obscuring the sculpture. *observabilis* Turner
- (47) 48. Pubescence on the epinotum not golden, usually black, or more rarely yellowish grey.
- (52) 49. Tergites shining and jet black, owing to the absence of any fine pubescence.
- (51) 50. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus half of the third. Epinotum with a greyish pubescence, obscuring the sculpture, and yellowish grey pilosity; sometimes both are entirely black. 24 mm. long. *incomptum* Gerst.
- (50) 51. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus one-third of the third joint. Epinotum with a fairly sparse, blackish pilosity, not entirely obscuring the sculpture. 26-30 mm. long. *nigrohirtum* Kohl
- (49) 52. Tergites covered with a microscopic, decumbent and black pubescence and therefore only moderately shining, if at all.

- (60) 53. Legs more or less ferruginous. At least the tibiae and apices of the femora, anterior margin of clypeus and apical segment of the abdomen are ferruginous or fusco-ferruginous.
- (55) 54. Wings with a distinctly greenish metallic lustre. Clypeus convex. Legs pale ferruginous, only the coxae, anterior femora in front and base of the middle and hind femora blackish. 27 mm. long.  
*haemorrhoidalis* Fab. var. *pulchripennis* Mocs.
- (54) 55. Wings with bluish or violaceous lustre, if slightly greenish then the clypeus is flattened in the middle just behind the anterior margin.
- (57) 56. The dorsum of the epinotum is separated from the declivity by an obtusely angular and deep groove which extends almost over the whole width of the apical margin. (Clypeus, scapes, apical third or more of the femora, tibiae and basal joint of the hind tarsi, ferruginous; interocular distance on the vertex equal to the length of the second joint of the flagellum plus two-fifths of the third joint. Dorsum of the epinotum as long as the first two joints of the flagellum plus half of the third joint. 23-27 mm. long.)  
*haemorrhoidalis* var. *volubilis* Kohl
- (56) 57. Dorsum of epinotum without a deep groove between it and the declivity; a small median transverse pit is present which does not extend over more than a fourth part of the apical margin.
- (59) 58. 21-24 mm. long. Dorsum of epinotum without a trace of a median longitudinal impression, but there is a shallow and round impression just in front of the apical margin; distinctly transversely striate and sparsely pilose. Posterior femora black, the extreme apex ferruginous.  
*decipiens* Kohl
- (58) 59. 25-27 mm. long. A shallow median longitudinal impression on the epinotal dorsum is clearly visible; the sculpture of the dorsum is very finely transversely rugulose and indistinct. Posterior femora ferruginous, blackish only at the base.  
*haemorrhoidalis* var. *Kobrowi* Arnold
- (53) 60. Legs black.
- (64) 61. Clypeus two-fifths wider than long. Large species, 26-30 mm. long.
- (63) 62. Basal joint of fore tarsi with nine spines on the outer margin.  
*Bohemanni* Dhlb.
- (62) 63. Basal joint of fore tarsi with ten spines on the outer margin.  
*Stadelmanni* Kohl var. *integrum* Arnold
- (61) 64. Clypeus one-fifth wider than long. Medium-sized species, 22-25 mm. long.  
*haemorrhoidalis* Fab.

KEY TO THE SPECIES OF *CHLORION* ♂♂

- (20) 1. Second cubital cell higher than wide on the cubitus.
- (5) 2. Claws with a single tooth at the base. Clypeus much wider than long. Stigma of the first tergite placed more or less in front of the middle of the segment. Species with metallic lustre, especially on the abdomen.  
(subgenus *Chlorion* Fab.)
- (4) 3. Mesopleurae punctured, never rugoso-punctate. (Petiole about as long as the third joint of the flagellum. The second joint of the flagellum shorter than the third. Median area of the clypeus convex, not flattened in front, the anterior margin with three teeth, the whole of it covered with coarse, outstanding, black hairs. 24-28 mm. long. Egypt.)  
*hirtum* Kohl
- (3) 4. Mesopleurae rugoso-punctate or reticulate-punctate.  
*xanthocentrum* Ill.

There are the following varieties:

- a. Wings yellow, the apical margin of the fore wing brown. Clypeus, antennae and legs more or less yellowish red. Thorax black. Epinotum dark metallic purple. Abdomen metallic blue, the apical segment and apical margins of the other segments more or less fulvous.  
var. *apicalis* Guérin



- b. Wings brown, with a violaceous metallic lustre. Legs, antennae, head, pro- and mesonotum, last two abdominal segments and apical margins of the other segments, bright ferruginous. Thorax dark metallic blue, abdomen metallic green. *var. zonatum* Sauss.
- c. Wings blackish brown, with metallic blue reflections. Antennae black. Thorax black, the epinotum with a purplish metallic lustre. Abdomen dark metallic blue. *var. kigonserana* Strand.
- d. Like c, but with the antennae and face more or less yellowish red. *var. subcyaneum* Gerst.
- e. Like d, but the face, antennae, tibiae, tarsi, apical third of the femora and apical abdominal segment ferruginous. *var. maxillaris* Pal.
- (2) 5. Claws with two to four teeth at the base. The apical half of the comb on the inner calcar of the hind tibia is composed of coarse spines not set closely together. Stigma of the first tergite placed at, or behind, the middle of the segment.
- (15) 6. Claws with two teeth at the base.
- (12) 7. Abdomen black, without transverse yellow or white bands. Wings not hyaline. Large species, with long legs. (subgenus *Harpactopus* Smith)
- (9) 8. Wings yellow, the apical margin brown. (Femora of the hind legs as long as the tibiae. Third joint of the flagellum shorter than the second by half the length of the first. 22-28 mm. long. Egypt, Nubia and Abyssinia.) *aegyptium* Lep.
- (8) 9. Wings not yellow.
- (11) 10. Wings brown, the apical margin beyond the cells hyaline or nearly so; mesonotum covered with black pubescence; petiole about as long as the second joint of the hind tarsus. *tyrannum* Smith
- (10) 11. Wings blackish brown all over, with metallic blue lustre; mesonotum covered with a dense, dull silvery pubescence, which entirely obscures the underlying sculpture; petiole as long as the second joint of the hind tarsus plus one-half of the third joint. *funebri* Berland
- (7) 12. Abdomen red or yellowish red, with apical bands of yellow or white. Wings hyaline. Head, thorax and epinotum covered with a dense and snow-white pubescence. Small species. (subgenus *Calosphex* Kohl)
- (14) 13. 14-16 mm. long. Petiole long, fully as long as the basal joint of the hind tarsus. *niveatum* Dufour
- (13) 14. 19-22 mm. long. Petiole much shorter than the basal joint of the hind tarsus, only as long as the second joint plus half of the third. *nigropectinatum* Tasch.
- (6) 15. Claws with three or four teeth at the base. Head and thorax with long white pilosity which is not so dense as to obscure the sculpture. (subgenus *Parasphex* Smith)
- (17) 16. 14-20 mm. long. Tergites only testaceous on the apical margins, without ivory-white bands. *viduatum* Christ.
- (16) 17. 12-16 mm. long. Tergites with ivory-white bands on the apical margins.
- (19) 18. Dorsum of epinotum dull, closely and transversely striate. *albisectum* Lep.
- (18) 19. Dorsum of epinotum fairly shining, finely and sparsely punctured. *albisectum*, race *marginatum* Smith
- (1) 20. Second cubital cell at least as wide as high, or wider. (Claws with two teeth at the base.)
- (28) 21. Second cubital cell more or less rhomboidal, wider than high. Epinotum without a stigma-groove. Petiole long, fully two-thirds as long as the rest of the abdomen. (subgenus *Isodontia* Patton)
- (25) 22. Pronotal collar linear above; dorsum of epinotum dull, closely punctured, without indications of transverse striation.
- (24) 23. Wings brown, with a violaceous lustre. *pelopoeiformis* Dhlb.

- (23) 24. Wings hyaline, yellowish at the base and along the costa, the apical margin, radial cell and greater part of the second and third cubital cells pale fuscous. *pelopoeiformis* var. *longiventris* Sauss.
- (22) 25. Pronotal collar not linear above. Dorsum of the epinotum with at least traces of a transverse striation or rugosity.
- (27) 26. First eight joints of the antennae and the legs, bright ferruginous; mesonotum dull, closely and strongly punctured; dorsum of epinotum dull, closely punctured and transversely rugulose. Clypeus with golden pubescence. *Simoni* Du Buysson
- (26) 27. Antennae and greater part of the legs black; mesonotum shining, finely and sparsely punctured; epinotum shining, finely, transversely striate, punctured between the striae. Clypeus with dull silvery pubescence. *Stanleyi* Kohl
- (21) 28. Second cubital cell rhomboidal, as wide as high. Epinotum with a stigma-groove. Petiole short, less than one-fourth the length of the rest of the abdomen, rarely longer than the second joint of the hind tarsus. (subgenus *Proterosphex* Fernald)
- (30) 29. Dorsum of the epinotum with three or four prominent transverse rugae. *gorgon* Kohl
- (29) 30. Dorsum of the epinotum finely sculptured, without prominent rugae.
- (36) 31. Metanotum bituberculate in the middle.
- (33) 32. Posterior femora, and the tibiae more or less, red; epinotum with a dense, shaggy, pale yellow pilosity and pubescence, obscuring the sculpture. *tuberculatum* Smith
- (32) 33. Pilosity of the epinotum not yellow. Posterior femora and tibiae black.
- (35) 34. Pilosity of the epinotum black, short and scanty, not obscuring the sculpture. *umbrosum* Christ. var. *metallicum* Tasch.
- (34) 35. Pilosity of the epinotum white, dense, long and obscuring the sculpture. *umbrosum* var. *lanatum* Mocs.
- (31) 36. Metanotum not bituberculate in the middle, at the most with only a feeble median longitudinal impression.
- (40) 37. Wings yellow.
- (39) 38. Wings pale yellow, the apical margin pale fuscous. Body and legs black. *luteipennis* Mocs.
- (38) 39. Wings dark yellow, the apical margin dark brown. Clypeus, first seven or eight joints of the antennae, pronotal collar, scutellum, metanotum and epinotum, greater part of the abdomen, and the legs flavo-ferruginous. *Paulinieri* Guérin
- (37) 40. Wings brown or blackish brown with metallic reflections, or pale fusco-hyaline.
- (42) 41. Tegulae ferruginous; wings pale fusco-hyaline, the apical margin fuscous. (Scapes, clypeus, mandibles excepting the apex, anterior tibiae and femora and the middle and hind femora and tibiae underneath, ferruginous. Clypeus and lower half of the face with silvery pubescence and pale yellow pilosity. Epinotum with a long, whitish pilosity and dull silvery pubescence.) *rufiscutis* Turner
- (41) 42. Tegulae black; wings brown or blackish brown.
- (44) 43. Tibiae and apices of the femora of the middle and hind legs yellowish red. Wings with a pronounced greenish metallic lustre. (Sternites without dense fringes of black hairs.) *haemorrhoidalis* Fab. var. *pulchripennis* Mocs.
- (43) 44. Legs black; wings without a distinctly green lustre.
- (56) 45. Sternites with apical fringes of long, curved, black hairs, which on at least the 5th and 6th sternites form dense tufts on each side.
- (47) 46. Smaller species, 18-25 mm. long. Second joint of the flagellum not quite one-third longer than the third joint. *incomptum* Gerst. (see figs. 13, 13 a and b)  
*nigrohirtum* Kohl (see figs. 14, 14 a and b)

- (46) 47. Larger species, 25–31 mm. long. Second joint of the flagellum two-thirds longer than the third joint.
- (51) 48. Face wide, the interocular distance on the vertex being equal to the length of the second and third joints of the flagellum, or even more.
- (50) 49. Interocular distance on the vertex equal to the length of the second, third and one-half of the fourth joint of the flagellum.
- (49) 50. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum. *abyssinicum* Arnold
- (48) 51. Face narrower, the interocular distance on the vertex being less than the length of the second and third joints of the flagellum. *Schoutedeni* Kohl
- (55) 52. Seventh sternite deeply, angularly emarginate.
- (54) 53. Eighth sternite bluntly triangular. *Bohemanni* Dhlb.
- (53) 54. Eighth sternite broadly rounded. *Neavei* Arnold
- (52) 55. Seventh sternite only shallowly emarginate, if at all. *Stadelmanni* Kohl var. *integrum* Arnold
- (45) 56. Sternites without fringes of long hairs.
- (58) 57. Petiole as long as the second joint of the hind tarsus plus one-third of the third joint. *haemorrhoidalis* Fab.
- (57) 58. Petiole as long as the second joint of the hind tarsus. *decipiens* Kohl

*C. (Chlorion) xanthocercum* Ill. (figs. 1, 1a and b). *Mag. Insektenkunde*, 1, p. 193. 1801.

*C. massaicus* Cameron. Sjöstedt, *Kilimandjaro-Meru Exped.* VIII, p. 262. 1910. Kohl, *Ann. K.K.N.H. Mus. Wien*, v, pp. 183–5. 1890.

♀. 26–37 mm. long. Colour very variable (see list of varieties hereunder).

Black, the epinotum and abdomen with a more or less steely-blue lustre; the apex of the abdomen more or less fusco-ferruginous. Mandibles ferruginous. Legs black, the tarsi reddish black. Wings brown, with a dull metallic blue lustre. Inner and outer margins of the mandibles, anterior margin of the clypeus and the temples with a row of long, coarse hairs, reddish on the mandibles, black on the other parts. Pro-mesonotum and tergites with a microscopic, decumbent, black pubescence. Mesopleurae with a sparse and shallow puncturation and some feeble rugae. Mesosternum sparsely and fairly finely punctured. Dorsum of epinotum closely and transversely striate, with a few transverse rugae in the middle which do not extend as far as the lateral margins. The dorsum is margined at the sides and apex by a depressed line, beyond which the sculpture becomes coarser, obliquely rugose, and extends over the sides. The stigma-groove is deep, and at the junction of the dorsum and declivity there is a raised line. There are a few shallow punctures on the face just behind the antennal sockets, otherwise the head is impunctate. Abdomen impunctate, except the apical segment which has a large and shallow puncturation.

Head wider across the anterior margin than behind, almost semicircular from the frontal aspect, with the vertex somewhat flattened. Mandibles falciform and very long, with a blunt tooth on the inner margin near to the apex. Clypeus with five small teeth on the anterior margin of the median area; in the middle as long as the third joint of the flagellum; the lateral sclerites shorter than the median. The labrum is transversely oblong, the apical angles

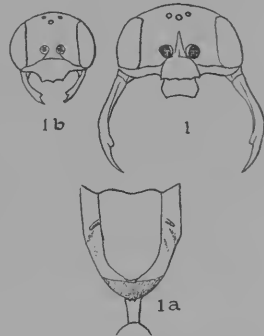


Fig. 1. *Chlorion xanthocercum*, ♀, head; a, ♀, epinotum; b, ♂, head.

rounded, the anterior margin concave. Lower part of the face deeply excavated at the sides; the prominent median portion between the antennal sockets is traversed by a longitudinal sulcus which, narrowed above, reaches the anterior ocellus. Third and fourth joints of the flagellum subequal, the second nearly twice as long as the third. Posterior ocelli twice as far from the eyes as from each other. Eyes convergent above, the interocular distance on the vertex equal to a trifle more than the length of the first three joints of the flagellum. Pronotal collar not short or discoid; the dorsal face is deeply impressed lengthwise in the middle and bituberculate, merging into the vertical anterior face by a fairly abrupt curve; seen from the side, it is about as long as the scutellum. Petiole about as long as the third joint of the flagellum. Anterior tarsi with 7 or 8 long spines on the outer margin of the basal joint.

♂. 23-33 mm. long. Face sparsely and very shallowly punctured. Mesopleurae coarsely punctate and rugose. Dorsum of epinotum less closely and more strongly striate than in the ♀. Sternites sparsely and finely punctured near the apical margins. Median area of the clypeus convex, the anterior half flattened, the anterior margin with a tooth on each side and sometimes with a tooth in the middle. Posterior ocelli half as far again from the eyes as from each other. Inner margins of the eyes nearly parallel; the interocular distance on the vertex equal to the length of the first three joints of the flagellum. Second joint of the flagellum a little shorter than the third. The raised line separating the dorsum of the epinotum from the declivity is much stronger and higher than in the ♀. Otherwise like that sex.

This species occurs throughout the Ethiopian Region, and owing to the wide range of variation in colour, several varieties have been described as distinct species. These varieties are the following:

Var. *unicolor* Saussure. *Reise der Novara*, Zool. II, p. 37. 1867.

The whole body black, without metallic blue lustre. Pilosity black. Wings dark brown with metallic blue lustre.

Mossambique.

Var. *kigonserana* Strand. *Archiv f. Naturges.* LXXXI, heft 2, p. 102. 1915.

♀, ♂. Abdomen excepting the petiole, and the thorax, more or less black, with metallic blue lustre. Pilosity black. Wings as in *unicolor*.

East Africa.

Var. *subcyaneum* Gerst. *Monatsb. Akad. Wiss. Berlin*, p. 510, ♀. 1857.

Antennae, and in the ♂ also the face, more or less yellow. Otherwise like *kigonserana*.

East Africa.

Var. *maxillaris* Pal. Beauv. *Ins. reçu en Afr. et Amér.* p. 38. 1811.

*affinis* Smith. *Cat. Hymen. B.M.* IV, p. 240, ♂, ♀. 1856.

*fulvipes* Gerst. *Monatsb. Akad. Wiss. Berlin*, p. 510, ♂. 1857.

*levilabris* Cam. *Ann. Trans. Mus.* II, p. 137, ♀. 1910.

Abdomen and thorax entirely or in greater part dark metallic blue. Pilosity black. Wings dark brown, with metallic reflections. Legs, clypeus and antennae in greater part ferruginous, the apical abdominal segment also more or less reddish.

East Africa, Congo and Natal.

Var. *instabilis* Smith. (Plate IX, fig. 5.) *Cat. Hymen. B.M.* IV, p. 240, ♂, ♀. 1856.

"♀. 30-40 mm. long. Head black; the inner orbit narrowly and the outer orbit of the eyes broadly rufo-testaceous; the antennae and the face anteriorly rufo-testaceous, the mandibles ferruginous; the head is sometimes rufo-testaceous, with merely a black stain enclosing the ocelli; the mandibles fringed beneath with long hairs. Thorax of an obscure blue-black; sometimes the epinotum is tinged with green; the pro- and mesothorax more or less rufo-testaceous, rarely quite black; the wings nigro-caeruleous; the legs pale ferruginous, the coxae and trochanters black or fuscous; the abdomen blue with purple iridescence, the apical segment pale ferruginous; in some examples the apical margins of the second and following segments are more or less rufo-piceous.

"♂. 23 mm. long. Antennae pale fulvous; the head, pro- and mesothorax above, the tegulae and legs pale ferruginous; the three apical segments of the abdomen are also pale."

Guinea, Congo and Nigeria.

Var. *apicalis* Guérin. Lefebv. *Voy. Abyss.* VI, p. 357. 1850.

Wings yellow, with brown apical margin. Antennae, legs, head and apical abdominal segment more or less ferruginous. The middle and hind femora black except at the apex. Thorax black, with a purplish lustre, very inconspicuous in the ♀, but fairly apparent in the ♂, especially on the epinotum. In the ♂ the apical margins of the second to sixth abdominal segments are narrowly fulvous. Pubescence of the clypeus and face yellowish silvery, more abundant than in the type of the species. Abdomen steel-blue. Pubescence on the pronotal collar and mesonotum yellowish brown or dark brown.

Abyssinia and Uganda.

Var. *zonatum* Sauss. *Reise der Novara, Zool.* II, p. 36, ♂. 1867.

Legs, antennae, head, pro- and mesonotum, last two abdominal segments and apical margins of the second to sixth segments, bright ferruginous. Thorax dark metallic blue. Abdomen metallic green. Wings brown, with a violaceous lustre.

Guinea. This is probably the ♂ of *instabilis* Smith.

*C. (Parasphex) viduatum* Christ. (figs. 2 and 2 a). *Naturg. Ins.* p. 305. 1791.

♀. 18-24 mm. long. Abdomen, excluding the petiole, ferruginous, the fourth and fifth tergites usually more or less black at the base, the apical margins of all the segments testaceous; the rest of the body black, except the last joints of the tarsi which are fusco-ferruginous. Wings hyaline, the veins reddish brown. The short spines on the legs are white, the longer ones, including the rather thin cilia of the tarsal comb, blackish.

Face, clypeus, temples, pronotal collar, sides of the thorax and lateral margins of the mesonotum covered with a dense, decumbent, silvery pubescence which in fresh examples completely hides the underlying sculpture. The pubescence also covers the upper side of the coxae, trochanters, femora and tibiae. The pubescent areas also have a long, outstanding, white pilosity. The dorsum of the epinotum has a short, greyish and erect pubescence, not conspicuous when viewed from above. Vertex and occiput moderately shining, sparsely, finely and very shallowly punctured. Mesonotum shining, sparsely punctured, the punctures larger and deeper than those on the vertex. Scutellum

and postscutellum shining, the former with a few punctures. Mesosternum shining, rather coarsely but not closely punctured. Dorsum of epinotum dull, closely and finely transversely striate, not quite so long as wide across the middle, but a little longer than the mesonotum. Inner margins of the eyes almost parallel. Clypeus not quite twice as wide as long, the anterior margin moderately convex. Interocular distance on the vertex equal to the length of the first three joints of the flagellum. The second joint of the flagellum is two-thirds longer than the third joint. Posterior ocelli as far from the eyes as from each other. Petiole shorter than the first tergite, and a little shorter than the basal joint of the hind tarsus. Claws with three teeth at the base, and sometimes with a rudimentary fourth tooth.

♂. 14-20 mm. long. The silvery pubescence is not so dense as in the ♀. Vertex distinctly punctured. Puncturation of the mesothorax stronger than in the ♀. Clypeus produced farther forwards than in the ♀, the anterior margin with a slight excision in the middle. Interocular distance on the vertex equal to the length of the second, third and fourth joints of the flagellum. The second joint of the latter is not quite half as long again as the third. Petiole as long as the first tergite and as long as the basal joint of the hind tarsus. Otherwise like the ♀.

A widely distributed species, found throughout Africa, and also in Asia Minor, India and China. (R.M. and T.M. colls.)

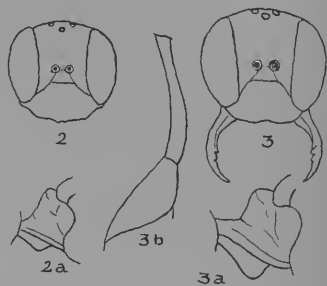


Fig. 2. *Chlorion viduatum*, ♀, head; a, ♀, pronotum, lateral view.

Fig. 3. *Chlorion albisectum*, race *marginatum*, ♀, head; a, ♀, pronotum; b, ♀, petiole and 1st tergite.

*C. (Paraspheg) albisectum* Lep. *Encycl. méth.* x, p. 462, ♂, ♀. 1825.

This species differs from *marginatum* Smith in only a few points, and since there is no appreciable difference in the genitalia of the ♂♂, it is necessary to sink *marginatum* to the rank of a subspecies. All the examples from the Ethiopian Region which I have seen, including some in the Brauns' collection determined by Kohl as *albisectum*, belong to the race *marginatum*. The type of the latter, in the British Museum, has been examined for me by Dr Waterston, and there is not the slightest doubt that in all characters our African examples conform to the type of *marginatum*. The varieties described by Berland, and quoted below, should be attached as varieties to *marginatum* rather than to the type of the species.

*Albisectum* differs from its race *marginatum* as follows:

Mesonotum more strongly punctured, the punctures fairly deep. Dorsum of epinotum dull, transversely striolate or rugulose, with numerous shallow punctures between the fine rugae. Pilosity on the head and vertex less abundant, especially on the pro-mesonotum. In the ♀ the petiole is slightly shorter, being as long as the first joint of the hind tarsus plus half of the second joint. In the ♂ it is as long as the first and second joints.

Distributed throughout the Mediterranean region, as far north as Switzerland and south as far as Algeria and Egypt.

*albisectum*, race *marginatum* Smith (figs. 3, 3 a and b). *Cat. Hymen. B.M.* iv, p. 267, ♂, ♀. 1856.

*curvilineatus* Cam. *Ann. Soc. Ent. Belg.* lvi, p. 398. 1912.

*Sjöstedti* Cam. Sjöstedt, *Kilimandjaro-Meru Exped.* viii, p. 263. 1910.

♀. 13-18 mm. long. Head and thorax black. Legs black, the tarsi dark brown. Petiole varying from ferruginous to black. First tergite, the whole of the second and the base of the third abdominal segment ferruginous, the sixth sternite fusco-ferruginous; the rest of the abdomen black, with ivory-white apical margins on the first five tergites. Wings hyaline, with a very pale fuscous apical margin, the veins brown, but near the base more or less ferruginous like the tegulae. Clypeus, face, temples and sides of the thorax with decumbent whitish pubescence, barely obscuring the sculpture of the thorax. The upper surface of the legs has a similar pubescence. Pilosity white and rather scanty. The shorter spines on the legs are whitish, the tarsal comb and longer spines at the apices of the joints are fusco-ferruginous. Vertex, occiput and pronotum shining and almost impunctate. Mesonotum shining, shallowly, finely and sparsely punctured. Scutellum and postscutellum shining, the former with a few small punctures. Mesopleurae and mesosternum rugose and punctate, the metapleurae smooth in front and rugose behind. Dorsum of the epinotum shining, very sparsely and finely punctured, with a narrow longitudinal area down the middle which is closely, finely striate and somewhat duller than the punctured parts; at the sides just above the metapleurae it is coarsely, obliquely rugose. Declivity dull and transversely striate. Abdomen smooth and shining. Clypeus two-thirds wider than long, the anterior margin depressed, convex, and shallowly excised in the middle. Mandibles with two teeth on the inner margin a little beyond the middle. Interocular distance on the vertex equal to the length of the first four joints of the flagellum. The second joint is a little more than half as long again as the third joint. Posterior ocelli as far from the eyes as they are from each other. Pronotal collar convex transversely and from front to back, about two and a half times wider than long in the middle. Dorsum of epinotum nearly as long as the mesonotum and scutellum united, a little wider than long in the middle. Petiole long, slightly curved upwards, as long as the first two joints of the hind tarsus. Apical sternite compressed transversely, projecting beyond the apical tergite. Tarsal comb composed of long, flattened cilia. Claws with three teeth at the base. Second cubital cell barely higher than wide on the cubitus.

♂. 12-16 mm. long. Black. Mandibles piceous, tegulae fusco-ferruginous. Petiole black, first tergite and base of the second usually ferruginous, the apical margins of the second to fifth tergites with transverse ivory-white bands, the first often with the same colour at the sides of the apical margin. The white pilosity on the thorax longer than in the ♀, the pubescence on the other hand much scantier. Vertex sparsely and finely punctured. Dorsum of epinotum a little more strongly punctured than in the ♀, but the closely striated median strip is usually absent. Clypeus more produced in front than in the ♀, the anterior margin not distinctly excised in the middle. Interocular distance on the vertex equal to the length of the second to fifth joints of the flagellum. Petiole longer than the first tergite and a trifle longer than the first two joints of the hind tarsus. Sternites flattened, the fourth, fifth and sixth covered with a microscopic, adpressed, greyish pubescence. Otherwise like the ♀.

West Africa; South Africa from Rhodesia to the Cape. (R.M. and T.M. colls.)

Occasionally the ♀ has the legs more or less red, and the anterior margin of the clypeus dark reddish brown. It is doubtful whether such slight variations are worth naming since intermediate forms are almost certain to occur, but in the *Bull. Mus. Nat. d'Hist. Nat. Paris*, No. 3, 1926, Berland has described the following varieties:

Var. *Chudeauxi* Berland. *Loc. cit.* p. 168.

"Anterior margin of the clypeus, the mandibles excepting the apex, the scapes and the first joints of the flagellum, red; legs red, excepting the coxae which are in greater part black; petiole red, abdomen red, the 4th-6th tergites and the apical part of the third, black; cilia of the tarsal comb yellowish white. Upper Senegal-Niger; Nara district, Balé. ♀."

A specimen from the Lydenburg district in the Transvaal Museum agrees in all points with the above description; it has, however, distinctly yellowish fuscous wings.

Var. *Alluaudi* Berland. *Loc. cit.* p. 168, ♂, ♀.

"Tegulae reddish, as also the anterior margin of the clypeus, underside of the femora, and the knees more or less; petiole reddish, brown at the base, abdomen black, the first tergite and the second sternite red, teeth of the tarsal comb reddish. Ivory Coast."

Var. *congoensis* Berland. *Loc. cit.* p. 169, ♀.

"Antennae dark red, tegulae and tarsi brown; petiole brown, becoming paler towards the apex. French Congo, Libreville."

*C. (Parasphe) Perezi* Berland. *Loc. cit.* p. 170, ♀, ♂.

"♀. 17 mm. long. Head, antennae, thorax and legs entirely black, the claws and the hind margin of the tegulae brownish red; petiole more or less dark reddish brown, sometimes black, the rest of the abdomen entirely bright red, the tergites with not very distinct pale yellow apical margins, the last tergites sometimes with a brownish patch in the middle; wings hyaline, the veins brownish red. On the face, temples, clypeus and front of the thorax there is an erect, whitish pilosity, and in addition there is a very dense, decumbent pubescence, snow-white or slightly golden, on the face, clypeus, temples, pronotum, lateral and posterior margins of the mesonotum, mesopleurae, the whole of the epinotum, the coxae, trochanters, anterior face of the hind femora and the back of the anterior femora; on the first tergite there is a very fine, decumbent, yellowish pubescence. Spines on the legs white, excepting the tarsal comb and the calcaria which are brown. Eyes slightly convergent below, the posterior ocelli farther from each other than from the eyes; clypeus convex, its anterior margin rounded, slightly excised in the middle; first and second joints of the flagellum equal in length to the third and fourth. Mesonotum smooth, shining, with some sparse puncturation; scutellum strongly gibbous, smooth, with a few punctures and a median impression, which is sometimes not clearly visible except in its posterior half; epinotum finely striated transversely, the striation hidden by the pilosity, the sides strongly striated; mesopleurae punctate. Second cubital cell fairly large. Petiole curved, as long as the hind coxa and trochanter, or nearly as long as the first joint of the hind tarsus, or as long as the first three joints of the flagellum.

"♂. 14-16 mm. long. Like the ♀, sometimes with the petiole quite black and the brown patches on the tergites more developed.



"Senegal, 3 ♂♂ and 4 ♀♀. (Coll. J. Pérez.) This species, allied to *albisectum*, is distinguished from other African species chiefly by the entirely red abdomen, the silvery pubescence and the venation of the wings."

Apart from the presence of pubescence on the epinotum so dense as to hide the striation, I can see no difference between this insect and *viduatum* and strongly suspect that it is no more than a slight variety of the latter. The figure of the venation given by Berland also agrees with that of *viduatum*.

*C. (Parasphex) leucosoma* Kohl. *Ann. K.K.N.H. Mus. Wien*, v, p. 338, ♀. 1890.

This species, originally recorded from Cairo, has also been taken at Dakar, Senegal (teste Berland), and therefore comes within the scope of this monograph.

According to Kohl this insect (♀, 17 mm. long) resembles *marginatum* Smith completely in the shape of the collar and scutellum, the length of the petiole, number of teeth on the claws and convergence of the eyes, and but for a slightly longer clypeus would have been considered by that author as a variation of *marginatum*. In other characters it differs from that race of *albisectum* as follows: "In general appearance strongly resembling *C. niveatum*. As in that species, the head, thorax and greater part of the legs are covered with a dense, decumbent, snow-white pubescence, so that the sculpture below is invisible; the abdomen has a pale yellowish red colour and bright yellow apical margins. Wings quite pale with an almost milky-white reflection. In the unique example, the first recurrent vein enters the first cubital cell and the second enters the third cubital cell."

Berland also draws attention to the shortness of the palpi in this species.

*C. (Isodontia) pelopoeiformis* Dhlb. (figs. 4 and 4a). *Hym. Eur.* i, p. 437. 1845.

♀. 22-29 mm. long. Black; mandibles, scapes, first five joints of the flagellum and the legs usually fusco-ferruginous, the middle and hind femora black in front. The reddish coloration is variable in degree and sometimes extends over the pronotum and the anterior part of the mesothorax, but the thorax is rarely entirely fusco-ferruginous. Wings dark brown, with a violaceous lustre, the basal lobe of the hind wing almost hyaline. Clypeus, face, temples and posterior half of the petiole with a very sparse, greyish yellow pubescence.

Clypeus with a reddish brown pilosity, long but not very dense. The rest of the head, epinotum and petiole with a long greyish pilosity, the rest of the thorax with a sparse, blackish pilosity. On the temples there are some black hairs intermixed with the grey ones. Head and thorax dull, excepting the scutellum. Clypeus and face closely, finely and shallowly punctured. The vertex on each side of the ocellar area is microscopically punctured, but behind it the puncturation is stronger than on the face. Thorax not coarsely punctured; the puncturation fairly sparse on the pronotum, scutellum and metapleurae, close elsewhere. On the dorsum of the epinotum it is so close and regular that the sculpture is almost reticulate-punctate. Basal half of the petiole shining. Abdomen moderately shining, but in fresh specimens this feature is masked by a sparse, blackish pubescence. Mandibles with a sharp tooth on the inner margin. Clypeus convex, the anterior margin

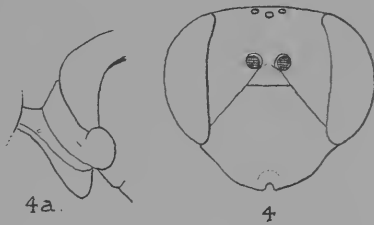


Fig. 4. *Chlorion pelopoeiformis*, ♀, head; a, ♀, pronotum.

moderately convex, with a small, round excision in the middle, behind which there is a small depressed area which is sometimes indistinct. The clypeus is very little wider than long in the middle. Inner margins of the eyes feebly convergent below, almost parallel. Posterior ocelli half as far again from the eyes as from each other. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus half of the third. The second joint is a little more than half as long again as the third. Pronotal collar very short, depressed below the level of the mesonotum, the dorsal face almost linear. Scutellum fairly convex, with a very shallow median longitudinal impression. Dorsum of epinotum convex transversely, sloping towards the declivity, shorter than the mesonotum and about twice as long as the scutellum. Petiole slightly curved upwards, as long as the hind femur, and a little longer than the basal joint of the hind tarsus. First tergite a little more than one-quarter longer than wide at the apex. The rest of the abdominal complex ovate, twice as long as wide in the middle. Claws with two acute teeth at the base. Second cubital cell about one and a half times longer on the cubitus than high; the second abscissa of the radius half as long again as the third. First recurrent vein interstitial with the second transverse cubital vein, or nearly so.

♂. 18-26 mm. long. Pilosity of the head and thorax grey or greyish yellow all over, not intermixed with blackish hairs as in the ♀. Third to sixth sternites with a long, black pubescence. Second joint of the flagellum one-third longer than the third joint. Posterior ocelli a little nearer to the eyes than in the ♀. Interocular distance on the vertex equal to the length of the first three joints of the flagellum. First tergite narrower than in the ♀. Otherwise like the ♀.

East Africa, from Khartoum to Zululand. (R.M. and T.M. colls.)

A ♀ specimen from Bulawayo in the Rhodesia Museum shows a peculiar aberration in the structure of the clypeus. On each side of the middle it is fairly deeply hollowed out, almost to the anterior margin, thereby leaving a broad longitudinal torus in the middle.

*pelopoeiformis* var. *longiventris* Sauss. *Reise der Novara*, II, *Hymen.* p. 37, ♂. 1867.

*meruensis* Cam. Sjöstedt, *Kilimandjaro-Meru Exped.* VIII, p. 264, ♀. 1910.

This form differs from the type chiefly by the colour of the wings and the greater extent of the red coloration. Both the fore and hind wings are smoky hyaline, yellowish at the base and along the costa, the veins and stigma reddish yellow; the fore wing has the radial cell, the second and third cubital cells in their upper part, and the apex beyond the radial cell, deeply clouded with fuscous. The legs, clypeus anteriorly, scapes and first six joints of the flagellum and greater part of the sides of the thorax are ferruginous. The underside of the petiole and sides of the first tergite, the apical tergite and apical margins of the fifth tergite are also ferruginous.

♂. Colour as in the ♀, but the scutellum is also more or less fusco-ferruginous at the sides. Pubescence on the third to sixth sternites reddish brown.

Guinea and East Africa; Lonely Mine, Gwaii and Victoria Falls, S.R. (R.M. and T.M. colls.)

*C. (Isodontia) Simoni* Du Buysson (figs. 5 and 5a).

*Eremochares Simoni.* *Ann. Soc. Ent. France*, pp. 356-7, ♂, ♀. 1897.

♀. 21-25 mm. long. Head and thorax black. Mandibles except at the apex, scapes and first six joints of the flagellum, clypeus, pronotal tubercles and tegulae, ferruginous. The extent of the red colour on the clypeus is vari-

able, but at least the anterior third is red. Legs, including the coxae and trochanters, ferruginous, but the hind coxae, trochanters and femora are black above. Petiole black above, ferruginous below. Abdomen ferruginous; the third and fourth tergites entirely, the apical half of the second tergite and two small oblique spots near the apical margin of the first tergite, black. The third and fourth sternites sometimes slightly blackish, but usually fusco-ferruginous. The second to fifth tergites have the apical margins narrowly stramineous. Wings hyaline, the costal margin suffused with yellow, the apical margin with a pale fuscous cloud, the veins yellowish in the basal half of the fore wing, brownish beyond. Face, clypeus, temples, sides of the thorax, coxae, trochanters and the posterior femora above with a yellowish grey pubescence and a sparse whitish pilosity. Tergites 2-6 with a greyish, decumbent and inconspicuous pubescence. Clypeus dull, microscopically punctured, with a few larger punctures here and there, the sculpture obscured by the pubescence as on the face. The latter is also dull, and rugulose. The vertex behind the ocelli is moderately shining, sparsely and fairly strongly punctured. Temples smooth and shining. Pronotal collar moderately shining, finely and not closely punctured. Mesonotum, scutellum and metanotum not quite dull, closely and distinctly punctured, much more strongly so than in *pelopoeiformis*, and entirely without the short pilosity which is present on those parts in that species. Scutellum fairly flat. Mesopleurae dull, rugulose-punctate. Metapleurae dull, closely and strongly punctured in front, moderately shining and sparsely punctured behind. Dorsum of epinotum dull, transversely and closely rugulose and punctate, the sides and declivity dull, finely and closely punctured and somewhat coriaceous. Mandibles with one large tooth on the inner margin close to the apex. Clypeus slightly longer than wide, moderately convex transversely, the anterior margin with a small excision in the middle; in the middle of the basal half there is a feeble longitudinal carina. The clypeus is less produced in front than in *pelopoeiformis*, and the anterior margin, except at the sides, is almost transverse. Interocular distance on the vertex equal to a little less than the length of the second and third joints of the flagellum; the inner margins of the eyes are feebly convergent above and below. Second joint of the flagellum not quite one-fourth longer than the third; the third and fourth joints subequal. Posterior ocelli as far from the eyes as they are from each other. Pronotal collar short, but not linear above as in *pelopoeiformis*, and not depressed so far below the level of the mesonotum; it is about five times wider than long in the middle. Dorsum of epinotum distinctly less convex transversely than in *pelopoeiformis*, and as in that species twice as long as the scutellum. Petiole longer than the hind femur, as long as the hind tibia or the first two joints of the hind tarsus. First tergite nearly twice as long as its greatest width. Second cubital cell half as long again on the cubitus as high; the second abscissa of the radius two and a third times longer than the third. First recurrent vein entering the second cubital cell at about its apical fourth. Claws with two teeth at the base.

♂. 20 mm. long. First seven joints of the flagellum and last three abdominal segments ferruginous, otherwise coloured like the ♀. Pilosity more abundant than in the ♀ and present on the pronotal collar and mesonotum. The former has a fairly dense, decumbent, yellowish pubescence on the dorsal face somewhat obscuring the sculpture, and there is a little of the same

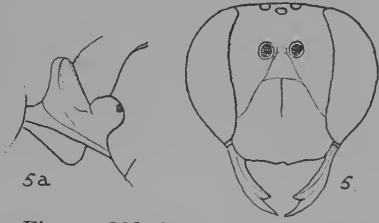


Fig. 5. *Chlorion Simoni*, ♀, head;  
a, ♀, pronotum.

pubescence on the scutellum, metanotum and sides of the mesonotum. Punctuation of the mesonotum a little stronger than in the ♀, and on the epinotum deeper. Second joint of the flagellum a little more than one-third longer than the following joint, which is shorter than the fourth. Interocular distance on the vertex nearly equal to the length of the second and third joints of the flagellum. Petiole a little shorter than the hind tibia. Otherwise like the ♀.

Hamman's Kraal, Bechuanaland; Dondo, P.E.A.; Southern Rhodesia and Transvaal. (R.M. and T.M. colls.)

*C. (Isodontia) Stanleyi* Kohl (figs. 6 and 6a). *Ann. K.K.N.H. Mus. Wien*, v, p. 376, ♀, ♂. 1890.

♀. 18–22 mm. long. Black; the first tergite and the hind tibiae more or less fusco-ferruginous. Sometimes the antennae and the greater part of the abdomen are dark reddish brown. Mandibles piceous. Wings pale fusco-hyaline, with a distinct violaceous lustre, the costal and apical margins fuscous. Clypeus, face, temples and dorsal face of the pronotal collar with white pubescence; the head, thorax and femora with a long, and not dense, white pilosity. Face and clypeus dull, with a few small punctures. Vertex and temples shining, the former sparsely punctured behind the ocelli.

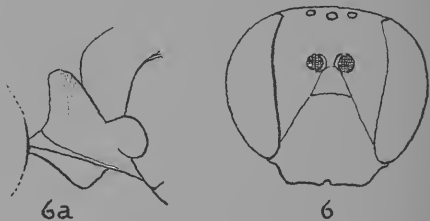


Fig. 6. *Chlorion Stanleyi*, ♀, head; a, ♀, pronotum.

Anterior face of the pronotal collar, mesonotum, scutellum and metanotum shining, finely and sparsely punctured. Meso- and metapleurae shining, with shallow punctures which are larger than those on the mesonotum. Dorsum of epinotum with a slight gloss, transversely rugulose, shallowly punctate between the rugae, which are fairly close together and discontinuous. Abdomen smooth and shining. Mandibles tridentate. Clypeus like that of *Simoni*. Labrum longitudinally carinate in the middle. Inner margins of the eyes slightly convergent above and below. Second joint of the flagellum half as long again as the third, the latter as long as the fourth. Interocular distance on the vertex a little shorter than the length of the second and third joints of the flagellum. Posterior ocelli as far from the eyes as they are from each other. Pronotal collar with a distinct dorsal face like that of *Simoni*, about five times wider than long in the middle. Dorsum of epinotum twice as long as the scutellum, not very convex. Petiole as long as the hind tibia, or the first two joints of the hind tarsus. First tergite two-thirds longer than wide at its widest, distinctly shorter than the petiole. Second cubital cell wider on the cubitus than high. Second abscissa of the radius about twice as long as the first, and two-thirds longer than the third.

♂. 15–19 mm. long. Labrum not carinate. Clypeus with a very shallow median triangular depression which does not reach the middle, the anterior margin feebly concave. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum. The second joint is only a little more than one-third longer than the following joint. Second to fifth sternites with a sparse, decumbent, grey pubescence and a long whitish pilosity. Otherwise like the ♀.

Cape van Gele, Belgian Congo; Bulawayo, Sanyati Valley, Gwaai and Sawmills, S.R. (October to March); Lichtenburg and Moodrift, Transvaal. (R.M. and T.M. colls.)

*C. (Harpactopus) tyrannum* Smith (figs. 7 and 7a). *Cat. Hymen. B.M.* iv, p. 264, ♀. 1856.

*vagus* Radoszk. *Jorn. Acad. Sc. Math. Lisbon*, viii, p. 209, ♂. 1881.

*Engelbegi* Brauns. *Ann. K.K.N.H. Mus. Wien*, xiii, p. 392, ♀, ♂. 1899.

♀. 25–32 mm. long. Black. Mandibles in the middle and the claws blackish red. Wings brown, the apical margins of both wings broadly fusco-hyaline; the veins dark brown. Clypeus and face, as far as the anterior ocellus, with a coarse whitish pubescence, intermixed with a long, exserted, black pilosity. On the pronotal collar above and on the anterior angles of the mesonotum there is also a little whitish pubescence, inconspicuous and masked by the pilosity.

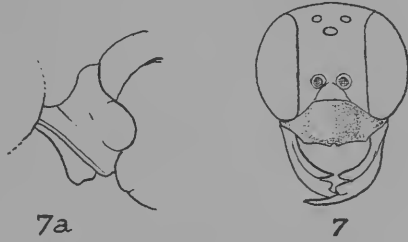


Fig. 7. *Chlorion tyrannum*, ♀, head;  
a, ♀, pronotum.

Pilosity on the thorax black, short and fairly dense except on the epinotum where it is long, very dense and shaggy and hides the underlying sculpture. Tibiae and tarsi strongly spinose, the comb of the anterior tarsi composed of long, black spines, the femora with a fairly sparse, blackish pilosity. Vertex and temples slightly shining, the former sparsely, the latter fairly closely, finely punctured. Anterior face of pronotal collar finely and transversely striate, the sides coarsely and obliquely striato-rugose, the dorsal face shallowly punctured. Mesonotum dull, fairly closely punctured, the punctures arranged in irregular transverse rows and becoming larger towards the posterior margin. Scutellum dull, punctured in front, longitudinally striate behind and punctured between the striae; distinctly impressed lengthwise in the middle so that it is bluntly bituberculate. Metanotum closely, transversely striate and punctate, raised in the middle into a subconical-tubercle. Mesopleurae dull, coarsely and obliquely rugose; the metapleurae with similar sculpture but with the rugae larger and farther apart. Dorsum of epinotum closely reticulate-rugose, the rugae emphasized transversely. Abdomen shining, the apical segment and apical half of the preceding segment with a sparse puncturation. Mandibles tridentate. Clypeus nearly twice as wide as long, the median area distinctly convex lengthwise, less so transversely, the anterior margin moderately convex and with a small excision in the middle. Sometimes there is a short median groove behind the anterior margin, not reaching back as far as the middle of the clypeus. Inner margins of the eyes slightly divergent below. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum. Posterior ocelli as far from the eyes as they are from each other. Second joint of the flagellum a little more than one-fourth longer than the third. Pronotal collar very convex transversely, about one-fifth as long as wide. Petiole short, about as long as the second joint of the hind tarsus, less than half as long as the hind tibia. Abdomen distinctly globose, the first tergite subvertical. Posterior femora and tibiae of equal length; the femur is as long as the first and second joints of the hind tarsus. Second cubital cell about as high as wide on the cubitus, the width on the cubitus twice as great as on the radius; third abscissa of the radius a little longer than the second, but shorter than the first.

♂. 16–21 mm. long. Mandibles bidentate. Anterior margin of the clypeus feebly concave. Fourth and fifth sternites clothed with a fine, pale brownish pubescence, their apical margins with a row of thick, black hairs. Interocular

distance on the vertex equal to the length of the first three joints of the flagellum; the second joint of the flagellum not quite half as long again as the third. Posterior ocelli a little nearer to the eyes than they are to each other. Otherwise like the ♀.

Algoa Bay; Bothaville and Bloemfontein, O.F.S.; Sawmills, S.R. October to March.

The appearance of this species coincides with the swarming of the migratory locusts which constitute their prey. Following a heavy infestation of locusts in S. Rhodesia in 1924, this species appeared here, at Sawmills, for the first time within the last 16 years. The species described by Kohl as *tyrannum* is obviously not the species described by Smith, since it differs in the structure of the clypeus, the colour of the wings, the pubescence on the mesonotum and the length of the femora; it is probably a variety of *funnebris* Berland.

*C. (Harpactopus) funnebris* Berland. *Bull. Mus. Nat. d'Hist. Nat. Paris*, p. 202, ♀. 1926.

♀. 31–33 mm. long. Black. Clypeus, face and mesonotum, excepting the extreme anterior margin, covered with a dense, decumbent, silvery pubescence which hides the underlying sculpture. On the face the pubescence extends as far as the anterior ocellus, but sometimes it is limited to a narrow transverse band just below the ocellus, leaving the lower two-thirds of the face bare. Clypeus, temples and thorax with a sparse, coarse and long, black pilosity; on the epinotum it is brownish black, shorter and less dense than in *tyrannum* and not obscuring the sculpture. Wings dark blackish brown all over, with a metallic bluish green lustre. Clypeus, under the pubescence, fairly shining, smooth in the middle, sparsely and coarsely punctured at the sides. Vertex and temples not quite dull, sparsely and finely punctured. Pronotum dull, transversely striolate, convex transversely, as long as in *tyrannum*, the shoulders subangular when viewed from above. The sculpture of the mesonotum is hidden by the pubescence, but in front where that is absent the sculpture is seen to be transversely rugose; tegulae punctured at the base. Scutellum fairly strongly punctured, dull, with a median longitudinal and shallow impression; metanotum rugose, feebly bituberculate. Mesopleurae strongly and closely reticulate-rugose. Epinotum also reticulate-rugose, but not so closely as the mesopleurae. Coxae strongly punctate-rugose. Femora coarsely punctured, closely so below. Abdomen globose, smooth and nitidulous, the segments with a few fine punctures near the apical margins. Mandibles tridentate. Median area of the clypeus gibbous, very slightly excised in the middle of the anterior margin, which is convex. Inner margins of the eyes parallel. Interocular distance on the vertex equal to a little more than the length of the first two joints of the flagellum. The second joint of the flagellum is long, six and a half times longer than wide at the apex, and nearly twice as long as the third joint. Posterior ocelli as far from the eyes as they are from each other. Dorsum of epinotum as long as the metanotum, scutellum and mesonotum united. Petiole punctured at the base, longer than the posterior coxae, as long as two-thirds of the basal joint of the hind tarsus and a little longer than the second joint of the same. Femora and tibiae more slender than in *tyrannum*, the posterior femora are longer than the tibiae by one-fourth of the length of the basal joint of the tarsus. Second cubital cell nearly twice as wide on the cubitus as on the radius; the second abscissa of the radius a little longer than the third; both recurrent veins are received by the second cubital cell, or sometimes the second recurrent vein is interstitial with the second transverse cubital vein. Tarsal comb long; the basal joint

with eight or nine long spines and a thinner and shorter one between each of the longer. Claws with two teeth at the base. Tibiae and tarsi densely spinose as in *tyrannum*.

♂. 21–25 mm. long. Clypeus produced farther forwards than in the ♀, the apical margin narrowly depressed and shining; the median area less gibbous than in the ♀. The clypeus and face have only a faint trace of the silvery pubescence which is present in the ♀, and the black pilosity of the head and thorax is longer and more abundant. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum plus three-quarters of the fourth. The second joint is barely longer than the third, the two united as long as the fourth. Fourth to sixth sternites dull, without pubescence, the sixth with the posterior margin arcuate, so that the lateral angles stand out prominently, as in *Harpactopus macula* F. Seventh sternite with a blackish, erect pubescence. Petiole a little longer than in the ♀, as long as the second joint of the hind tarsus plus half of the third. Posterior femora not longer than the tibiae. Otherwise like the ♀.

Bura, East Africa; Abyssinia; Steynsburg, Klipplaat, Rondebosch and Willowmore, Cape Province; Vryburg, Bechuanaland; near Wangi, Brit. E. Africa (B.M. coll. 1 ♀). One ♀ in coll. Brauns has the pubescence on the mesonotum slightly golden.

This species, together with *Stschurovskii* Rad., *Radoszkowskii* Kohl and *lugens* Kohl (Palearctic Region), *Eatoni* Saunders (Algeria) and *tyrannum* Smith are all closely allied and are probably only races of one species, i.e. "*Pepsis*" *macula* F. The type of the latter from Arabia is in the Nat. Hist. Museum, Paris, and from a recent examination by Berland has been shown to be a true *Harpactopus*. That *lugens* Kohl is synonymous with *macula* F., as suggested by Berland, is almost certainly the case, to judge by the shape of the sixth sternite.

*C. (Harpactopus) aegyptium* Lep. (fig. 8). *Hist. Nat. Ins. Hymén.* III, p. 356. 1845.

*H. crudelis* Smith. *Cat. Hymen.* B.M. IV, p. 264, ♀. 1856. Kohl, *Ann. K.K.N.H. Mus. Wien*, v, p. 351, ♀, ♂. 1890.

♂ 22–28 mm., ♀ 26–34 mm. long.

"Shape compact. Wings yellow, the apical margin clouded with brown. Pilosity in both sexes black, that of the epinotum, temples and some parts of the thorax shaggy. Pubescence on the face, and sometimes on the collar white... Second cubital cell clearly contracted on the radius. Clypeus arched, the curvature barrel-shaped. The clypeus in the ♀ has an excision in the middle of the anterior margin, in the ♂ it is truncate with a shallow emargination. Labrum in the ♀ of a very peculiar shape; in the ♂ like that of *viduatum* Christ. Second joint of the flagellum in the ♀ as long as the third and fourth united, in the ♂ slightly longer than the fourth which is longer than the third. The distance between the eyes on the vertex in the ♀ is distinctly less than double the length of the first two joints of the flagellum, and not one and a half times the length of the second joint. Petiole in the ♀ a little shorter than the second joint of the hind tarsus, in the ♂ equal to the length of the second plus half of the third, or fully as long as the second and third joints of the flagellum united. Posterior femora in both sexes as long as the posterior tibiae, as long as the first two joints of the hind tarsus plus half of the third joint. Tibiae



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Fig. 8. *Chlorion aegyptium*, ♀, labrum (after Kohl).

of the fore legs in the ♀ nearly twice as long as the basal joint of the tarsus; the latter equal in length to the two following joints united, and bearing eight spines on the outer margin. Between these large spines there are finer but equally long ones. In the ♂ the anterior tibiae are one and a half times as long as the basal joint of the tarsus, the latter nearly as long as the three following joints united. The legs are as strongly spinose as in *tyrannum*. Claws with two teeth."

Abyssinia and Nubia; also found in Cyprus, Syria, Egypt, Mauritius and Northern India.

*C. (Proterosphex) Paulinieri* Guérin (Pl. IX, fig. 3). *Mag. de Zool. Ins.* XIII, p. 8, ♀. 1843.  
*eximius* Lep. *Hist. Nat. Ins. Hymén.* III, p. 360, ♂. 1845.

♀. 33-43 mm. long. Yellowish ferruginous, or pale burnt sienna; the face sometimes, the apical fourth of the second abdominal segment and the third to fifth segments black. The apical abdominal segment ferruginous or fusco-ferruginous. The underside of the thorax and the middle and hind coxae black. Mandibles ferruginous, black at the apex. Mesonotum blackish in front, the black colour extending in a narrow line down the middle. Last four or five joints of the flagellum black. Last joint of all the tarsi blackish over the apical half. Wings ochreous, with a broad brownish apical margin, and a faint violaceous lustre. Face, clypeus and mesonotum with golden pubescence; the sides of the thorax with a yellowish and not dense pilosity; the dorsum of the epinotum with a short, yellowish and erect pubescence, fairly dense but not clearly apparent unless seen from the side. Spines on the legs ferruginous, the claws fuscous. Clypeus with a few large shallow punctures. Vertex smooth and shining; pronotal collar moderately shining, smooth above, the anterior face finely and sparsely punctured. Mesonotum with a fine and very sparse puncturation, obscured by the pubescence. Scutellum and metanotum smooth and shining. Mesopleurae and mesosternum slightly shining, finely and sparsely punctured. Dorsum of the epinotum dull, very sharply and transversely rugose; the rugae, of which there are about 14, are not close together. The declivity is dull, transversely and sparsely rugose. The upper part of the metapleurae is depressed and vertically clathrate. Abdomen smooth and shining, with a few small and shallow punctures on the first two tergites and on the sides of the sternites. Mandibles with a blunt tooth on the inner margin near the apex. Clypeus convex, about one-third wider than long in the middle, with a narrow sulcus behind the arcuate anterior margin. Antennae long and slender; the second joint of the flagellum one-fourth longer than the third and six times longer than wide at the apex; third joint a little longer than the fourth. Inner margins of the eyes almost parallel. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus twice the length of the first joint. Pronotal collar discoid, not linear above, the dorsal face, which is feebly impressed in the middle, being about one-fifth as long as wide. Scutellum and metanotum longitudinally impressed in the middle. Dorsum of epinotum very convex transversely, a little longer than the mesonotum, with a wide and shallow pit at the apex. Petiole as long as the third joint of the flagellum. Claws with two teeth at the base. First joint of the anterior tarsi with nine or ten spines on the outer margin.

♂. 25 mm. long. Last abdominal segment and apical margin of the sixth, ferruginous. Mesonotum black, the anterior margin ferruginous at the lateral angles. The yellowish pilosity on the thorax longer and denser than in the ♀. Last three abdominal segments with a fairly abundant yellowish pilosity.



Clypeus a little longer in the middle than wide, the anterior margin of its median area shallowly concave, with a small blunt tooth in the middle. Interocular distance on the vertex equal to the length of the first two joints of the flagellum. Inner margins of the eyes feebly convergent below. Otherwise like the ♀.

Senegal; Yapi, Gold Coast (Dr J. J. Simpson), in B.M. coll.

Allied to *C. gorgon* Kohl.

*C. (Proterosphex) umbrosum* Christ. (figs. 9 and 9a). *Naturges. Ins.* p. 293, ♀. 1791.

*S. fumicata* Christ. *Loc. cit.* p. 295, ♂. 1791.

♀. 26–34 mm. long. Black. Face, clypeus and temples with a dense silvery pubescence intermixed with a long white pilosity. Dorsal face of the pronotal collar, pronotal tubercles and the lateral margins of the mesonotum also with silvery or whitish pubescence. The rest of the thorax has a fairly sparse whitish pilosity, not obscuring the sculpture. Posterior tibiae covered on the inner side with a greyish pubescence which becomes brown towards the apex. Vertex and occiput smooth, almost impunctate. Pronotum dull, microscopically rugulose. Mesonotum, scutellum and metanotum dull, very finely and fairly closely punctured; the sides of the thorax nitidulous, the mesopleurae more sparsely punctured than the mesonotum; metapleurae almost impunctate. Dorsum of epinotum dull, finely and transversely rugose, the rugae thin and straight; the sides of the epinotum nearly dull, with faint traces of rugae. Abdomen shining, the last two segments sparingly punctured. Mandibles tridentate, the apical tooth long, the basal one small. Clypeus convex, the anterior margin convex and entire, about one-third wider than long. Inner margins of the eyes feebly convergent above and below. Posterior ocelli about as far from the eyes as from each other. Interocular distance on the vertex slightly greater than the length of the first two joints of the flagellum. The second joint is two-fifths longer than the third. Pronotal collar thin, the anterior face almost vertical, the dorsal face short but not linear, strongly convex transversely. Scutellum moderately convex, with a feeble median longitudinal impression. Metanotum raised in the middle, where it is impressed lengthwise and therefore bituberculate. Dorsum of epinotum not quite as long as the mesonotum. Petiole hardly shorter than the second joint of the hind tarsus. The posterior tibia as long as the posterior femur and trochanter united. Basal joint of the anterior tarsi with 9 to 11 spines on the outer margin. Third cubital cell considerably narrowed on the radius so that the third abscissa of the radius is even shorter than the first, the second and third transverse cubital veins being almost contiguous. Wings hyaline, the apical margin faintly fuscous, darker at the base near the veins, which are dark brown.

♂. 23–28 mm. long. Mandibles bidentate; clypeus very strongly convex, the anterior margin broadly truncate. Second joint of the flagellum two-thirds longer than the third. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus half of the third. Inner margins of the eyes slightly convergent below. Petiole shorter than the second joint of the hind tarsus, slightly longer than the third joint. Seventh sternite with a tuft of brownish pubescence on each side. Otherwise like the ♀.

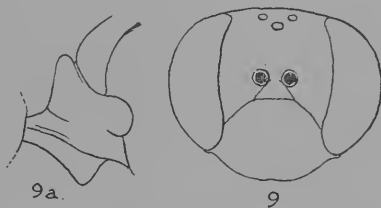


Fig. 9. *Chlorion umbrosum*, ♀, head; a, ♀, pronotum.

This is the typical form of the species which is found from India and China to the Celebes. Kohl records it also from Africa, but I have seen none from that region. There are several varieties of which the following are found in Africa:

*umbrosum* var. *metallicum* Tasch. *Zeitschr. f. d. ges. Naturw.* xxxiv, p. 414, ♂, ♀. 1869.

Pubescence of the clypeus and lower face silvery, intermixed with a whitish pilosity. On the rest of the head and on the thorax the pilosity varies from dark brown to black. Tergites with a pruinose pubescence, particularly in the ♂. Posterior femora and tibiae often reddish brown.

Rhodesia, Transvaal and Orange Free State. The commonest variety in the South African subregion. (R.M. and T.M. colls.)

*umbrosum* var. *lanatum* Mocs. *Magy. Akad. Term. Értek.* xiii, p. 34, ♂. 1883.

This differs from the type of the species by the much longer whitish pilosity, which on the epinotum is so dense as to hide the sculpture on the posterior half or more of the segment. The infuscation at the base of the wings is also less extensive.

Salisbury, Gwaai and Rusapi, S.R.; Scottsburg, C.P.; Bloemfontein, O.F.S.

*C. (Proterosphe) tuberculatum* Smith (vol. xi, pt 1, Pl. II, fig. 5 and figs. 10, 10a, 10b). *Ann. Mag. N.H.* xii, p. 291, ♀. 1873.

*S. luteifrons* Radoszk. *Jorn. Acad. Sc. Math. Lisbon*, viii, p. 208, ♀. 1881.

♀. 29 mm. long. Black. Middle femora and trochanters fusco-ferruginous; the hind legs, excepting the tarsi, pale red. Apical sternite reddish brown or black. Face and clypeus with a dense, pale golden pubescence and long, yellow pilosity. Thorax, excepting the pronotal collar, mesonotum and scutellum with a long, yellow pilosity, fairly sparse except on the apical two-thirds of the epinotum where it is dense and shaggy and overlies a fine silvery pubescence. The petiole on the upper surface is covered with pale golden pubescence. Vertex and apical segment of abdomen with a few long brown hairs. Mesonotum, vertex and epinotum dull, the rest of the body nitidulous. Mesonotum and mesopleurae with a very sparse and very fine puncturation, the mesosternum a little more strongly punctured. Dorsum of epinotum closely transversely striate. The rest of the thorax and the head impunctate. Sternites shining, the apical one with a shallow and sparse puncturation. Mandibles and clypeus as in *umbrosum*, but the clypeus is produced farther forwards and is a little longer, being only one-third wider than long. Interocular distance on the vertex slightly greater than the length of the first two joints of the flagellum. The second joint is two-thirds longer than the third joint. Pronotum as in *umbrosum*. Metanotum raised a great deal more in the middle than in *umbrosum* and very distinctly bituberculate. Petiole as long as the second joint of the hind tarsus, plus two-thirds of the third joint, and therefore distinctly longer than in *umbrosum*. Basal joint of anterior tarsi with 10 or 11 spines on the outer margin. Third cubital cell not so much narrowed on the radius as in *umbrosum*, the second and third transverse

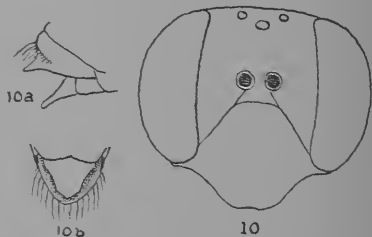


Fig. 10. *Chlorion tuberculatum*, ♀, head; a, ♂, apex of abdomen, lateral view; b, ♂, eighth sternite.

cubital veins being not nearly contiguous, the third abscissa of the radius being slightly longer than the first.

♂. 21–25 mm. long. Mesonotum more abundantly and a little more strongly punctured than in the ♀. Petiole as long as the second joint of the hind tarsus plus two-fifths to one-half of the third joint. Apical half of the seventh tergite depressed and shining, concave lengthwise, the margin between it and the basal half with a row of long, curved hairs. Otherwise like the ♀.

Sierra Leone and Nigeria; S. Rhodesia, Zululand and Natal; Sunday River, Cape Prov.

Not a common species. (R.M. and T.M. colls.)

*C. (Proterosphe) luteipennis* Mocs. (fig. 11). *Magy. Akad. Term. Értek.* XIII, p. 33, ♀. 1883.

♀. 25–30 mm. long. Black, apical abdominal segment fusco-ferruginous. Pubescence and pilosity black, the former very scanty on the face and clypeus, the pilosity on the epinotum with a slightly brownish tint; abdomen with a microscopic, adpressed pubescence, the apical tergite and the sternites on their apical margins with a few long black hairs. Inner side of the posterior tibiae with a dense, brownish yellow pubescence. Wings pale ochreous, the apical margin beyond the cells, fuscous. Dull, the microscopic puncturation hidden by the pubescence, except on the mesopleurae which have a slight gloss and are very shallowly punctuate. Dorsum of epinotum very feebly and transversely rugulose, the rugae barely apparent except in the middle; there is a longitudinal median impressed line which is very shallow at the base and merges into a slight fovea at the apex. Apical segment of the abdomen distinctly and fairly closely punctured, the last four sternites with a few large punctures behind the apical margin. Labrum carinate lengthwise in the middle. Clypeus not very convex, the middle of the anterior half flattened or very shallowly concave, the anterior margin moderately convex and produced into two small lobes in the middle. Inner margins of the eyes subparallel for the greater part of their length, convergent behind the level of the anterior ocellus. Second joint of the flagellum about two-thirds longer than the third. Interocular distance on the vertex equal to the length of the first two joints of the flagellum plus one-third of the following joint. Pronotal collar short, but not linear above, fairly convex transversely. Scutellum moderately gibbose, impressed lengthwise in the middle. Metanotum not raised into a tubercle in the middle. Dorsum of the epinotum convex transversely and longitudinally, shorter than the mesonotum. Petiole as long as the second joint of the hind tarsus. Basal joint of anterior tarsi with nine or ten spines on the outer margin. Third cubital cell considerably narrowed on the radius, the third abscissa of the radius being shorter than the first.

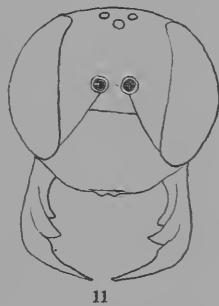


Fig. 11. *Chlorion luteipennis*, ♀.

♂. 22–28 mm. long. Face and clypeus with a dull golden pubescence. Sternites 2–7, with the apical half of the sides punctured and bearing a long, black pilosity which becomes denser on each succeeding segment. The eighth sternite has a dense, short and brownish pubescence. Mandibles bidentate. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum. The second joint of the flagellum is nearly half as long again as the third. Petiole slightly longer than the second joint of the hind tarsus. Otherwise like the ♀.

Egypt, Zanzibar; Salisbury and Hope Fountain, S.R.; Johannesburg, Natal and Algo Bay. Kohl records this species also from Ceylon and Amboina. (R.M. and T.M. colls.)

*C. (Proterosphex) castaneipes* Dhlb. *Hym. Eur.* 1, pp. 27 and 438, ♀. 1845. Kohl, *Ann. K.K.N.H. Mus. Wien*, v, p. 432. 1890.

"♀. 24-28 mm. long. Abdomen, excepting the petiole, and the legs, excepting the coxae, bright ferruginous....Wings slightly brown, with a feeble violaceous lustre. Pilosity whitish. The collar above and the lateral margins of the mesonotum with whitish pubescence. Sculpture exactly like that of *maxillosus* F. Epinotum very finely and transversely aciculate, barely noticeable. Petiole as long as the third joint of the hind tarsus, and shorter than the second joint of the flagellum by as much as the length of the pedicellus. The shape of the third cubital cell is like that of *nigripes* Smith. If the length of the petiole were not relatively different, and if the mesonotum and scutellum were covered with pilosity as in that species, I would be inclined to regard *castaneipes* as a variation of *nigripes* since it has also the same form of clypeus. In *castaneipes*, moreover, the second joint of the flagellum is relatively longer, since it is shorter than the third and fourth joints by only the length of the pedicellus; in *nigripes* it is at the most only as long as the third joint plus half of the fourth. Cape of Good Hope."

This species is apparently very scarce since it is not represented in the large collection of Dr Brauns, now the property of the Transvaal Museum, nor in the collections of any of the museums in South Africa.

*C. (Proterosphex) haemorrhoidalis* Fab. (figs. 12 and 12a-c). *Spec. Insect.* 1, p. 443. 1781.

*nigripes* Smith. *Cat. Hymen. B.M.* iv, p. 254, ♀. 1856. Turner, *Ann. Mag. N.H.* (8), x, No. 58, p. 369. 1912.

*umtalicus*, Strand. *Archiv f. Naturges.* LXXXI, p. 105, ♂. 1915.

*nigripes* var. *pachyderma* Strand. *Loc. cit.* p. 106, ♀. 1915.

♀. 22-25 mm. long. Black, apical segment of the abdomen ferruginous. Mandibles, excepting the apex, and sometimes the extreme anterior margin of the clypeus, fusco-ferruginous. Wings brown, the apical portion beyond the cells darker, with a bluish metallic lustre, here and there also violaceous. Pilosity black, fairly coarse and long on the face and clypeus, finer and shorter on the temples and sides of the thorax; rather dense on the epinotum where it is short on the dorsum and long on the sides and declivity, but not obscuring the sculpture. Mesonotum with a dense, black and decumbent pubescence, which hides the sculpture. In fresh specimens the sides of the face as far up as the antennal sockets have a thin greyish pubescence. Inner side of the posterior tibiae with a dense, brownish fulvous pubescence. Abdomen feebly nitidulous, the rest of the body fairly dull. Clypeus with a few large punctures from whence arise the coarse, black hairs. Epinotum closely and transversely rugulose, the sculpture very shallow and inconspicuous. Apical segment of

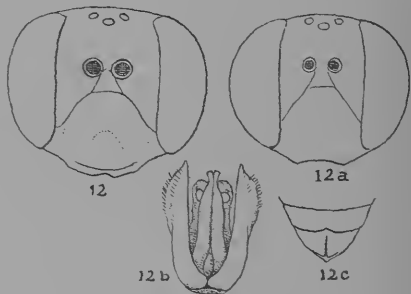


Fig. 12. *Chlorion haemorrhoidalis*, ♀, head; a, ♂, head; b, ♂, genitalia, dorsal view; c, ♂, seventh and eighth sternites.

the abdomen with a distinct puncturation, not coarse and not very dense, the apex of the tergite bluntly angular and shining. Labrum with a median longitudinal carina. Clypeus transversely impressed just behind the anterior margin, the impression fading out at the sides; the anterior margin is feebly convex and has a very small excision in the middle. The clypeus is fairly convex, but in the middle anteriorly it is slightly flattened. Inner margins of the eyes for the greater part parallel, convergent above only beyond the level of the anterior ocellus. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus two-thirds of the third joint. Posterior ocelli as far from the eyes as they are from each other. Second joint of the flagellum half as long again as the third, the latter as long as the fourth. Dorsal face of the pronotal collar not linear, but nevertheless very short, fully six times wider than long, feebly depressed in the middle; the anterior face is almost vertical. Scutellum distinctly gibbous, with a very shallow median longitudinal impression. Postscutellum not impressed in the middle. Dorsum of the epinotum convex transversely, as long as the mesonotum. Petiole as long as the second joint of the hind tarsus. First tergite as long as wide across the apical margin. Basal joint of anterior tarsi with nine spines on the outer margin. Second and fourth abscissae of the radius subequal, the first barely longer than the third.

♂. 18–22 mm. long. Apical segment of the abdomen black, the sternite sometimes fusco-ferruginous. Face and clypeus with a greyish silvery pubescence. Labrum not carinate. Clypeus much more convex transversely than in the ♀, not impressed behind the anterior margin, which is transverse or feebly concave; the middle third in front is not flattened as in the ♀, or only very slightly so. Second joint of the flagellum not quite half as long again as the third joint. Petiole as long as the second joint of the hind tarsus plus one-third of the third joint. Sternites without lateral fimbriae of long, curved hairs. Eighth sternite broadly triangular, bluntly carinate lengthwise in the middle. Sixth and seventh tergites finely and shallowly punctured, with a sparse black pubescence. Otherwise like the ♀. Nyasaland, Portuguese East Africa, Rhodesia, Transvaal and Natal.

The type of this species, which was unknown to Kohl, is in the Banksian collection in the British Museum. It has been examined by Turner, who has elucidated some of the synonymy. The description given above is based on specimens from the British Museum which have been compared with the type by Turner. That author, however, has wrongly synonymised the var. *volubilis* Kohl with the type, *volubilis* being a distinct colour variety. Specimens of *haemorrhoidalis* in some collections have been erroneously determined as *Bohemanni* Dhlb., which is a very similar but larger insect, with a different form of genital armature in the ♂, and with a wider clypeus and longer second joint of the flagellum in the ♀.

I have not seen the type of *umtalicus* Strand, but the description of that species seems to agree very closely with the ♂ of *haemorrhoidalis*, and I have therefore little hesitation in sinking it in synonymy. *S. nigripes* Smith var. *pachyderma* Strand is probably also synonymous with this species. From the description the only point of difference appears to be the length of the petiole which is said to be as long as the second joint of the hind tarsus plus half of the third joint.

*haemorrhoidalis* var. *volubilis* Kohl. *Ann. K.K.N.H. Mus. Wien*, x, p. 64, ♀, ♂. 1895.

This differs from the type of the species as follows:

♀. 23-27 mm. long. Clypeus, scapes, underside of the basal joints of the flagellum, apical third or more of the femora, the tibiae entirely and the basal joint of the tarsi on the upper side, ferruginous. Tarsi dark brown, more rarely fusco-ferruginous. Apical segment of the abdomen fusco-ferruginous, as in the type of the species. Interocular distance on the vertex equal to the length of the first two joints of the flagellum or a little more, less than the length of the second plus half of the third. The dorsum of the epinotum is a little more strongly rugulose, and the metanotum is more gibbous in the middle and has a shallow, but quite distinct, median longitudinal impression.

Two specimens, the only ones which I have seen, are in the Braunsian collection, both determined as *volubilis* by Kohl himself. They do not attain to the dimensions given by Kohl, measuring only 21 mm. long. The thorax is more slender than in *haemorrhoidalis* type.

“♂. 22-25 mm. long. The apical tergite, antennae, legs and clypeus black; only the pubescence on the inner side of the hind tibiae is fusco-ferruginous. Mandibles bidentate. Labrum with a feeble median longitudinal carina. Inner margins of the eyes slightly convergent below; their least distance apart across the clypeus is equal to the length of the third and fourth joints of the flagellum, or fully equal to the second plus half of the third, and almost the same as the interocular distance on the vertex.”

Grand Bassa; Cameroons and Togoland.

*haemorrhoidalis* var. *pulchripennis* Mocs. *Magy. Akad. Term. Értek.* XIII, p. 35, ♀. 1883.

♀. 27 mm. long. Coxae, trochanters, extreme base of the middle and hind femora above and the base and outer side of the anterior femora, black; all the rest of the legs bright ferruginous. Basal half of the mandibles, anterior margin of the clypeus and the scapes, fusco-ferruginous. Wings brown, the apical margin darker and with bluish-violaceous sheen, the rest of the wings with a pronounced greenish lustre. Apical margins of the abdominal segments brownish. Apical tergite black, the apical sternite black basally, piceous apically. Clypeus much more convex than in the type of the species, without a flattened median area in front. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus one-third of the third joint. Dorsum of epinotum more strongly sculptured than in the type of the species, the rugae coarser, especially at the sides.

♂. 25 mm. long. Anterior femora, middle femora except at the apex, and basal half of the hind femora, black; the last three or four joints of the tarsi fuscous. Otherwise the legs are bright ferruginous as in the ♀. Scapes black. Anterior margin of the clypeus black, feebly concave, with a very small transverse lobe in the middle. Wings, pilosity and sculpture as in the ♀. Otherwise like *haemorrhoidalis* type ♂.

This variety is larger than the type of the species, and apart from the colour of the wings and the shape of the clypeus hardly distinguishable from the var. *Kobrowi* described below. The description given above is based on a pair from Sierra Leone (J. J. Simpson) in the British Museum collection.

*haemorrhoidalis* var. *Kobrowi* v. nov.

♀. 24–27 mm. long. Wings as in the type of the species, without any distinct metallic green lustre. Apical segment of the abdomen and apical margin of the fifth tergite of a bright ferruginous colour, like the legs. Clypeus not strongly convex as in *pulchripennis* but like that of the type of the species. Fifth tergite, excepting a narrow median area, distinctly but shallowly punctured. Apical tergite more strongly and more closely punctured than in the type of the species, also shallowly impressed lengthwise in the middle. Dorsum of the epinotum finely and transversely rugulose as in the type of the species. Otherwise like the var. *pulchripennis*.

Johannesburg (G. Kobrow). Type in coll. Brauns.

*C. (Proterosphex) decipiens* Kohl. *Ann. K.K.N.H. Mus. Wien*, x, p. 65, ♀, ♂. 1895.

It is only with considerable hesitation that one can concede specific rank to this insect. It would perhaps be more correct to regard it as a race of *haemorrhoidalis*, notwithstanding a noticeable difference in the shape of the epinotum. Examination of examples in the Braunsian collection, determined by Kohl, shows that there is no appreciable difference in the genitalia of the respective ♂♂, and also that some of the differences between *decipiens* and *haemorrhoidalis* (*nigripes*) var. *volubilis*, indicated by Kohl, are based on erroneous measurements.

♀. 21–24 mm. long. In colour and pilosity this sex is exactly similar to *volubilis* ♀, but the clypeus of the latter lacks the yellowish pubescence which is present in *decipiens*, and it is also less wide. The dorsum of the epinotum is much more convex transversely and is also longer, being as long as the first three joints of the flagellum (in *volubilis* as long as the first two plus half of the third). It is finely transversely rugoso-striate and slightly glossy (quite dull in *volubilis*) and lacks the deep groove, obtusely angular in the middle, which separates the dorsum from the declivity. Contrary to Kohl's statement, the petiole in both forms is just as long as the second joint of the hind tarsus. The interocular distance on the vertex is fully equal to the length of the first two joints of the flagellum, or to the length of the second plus two-fifths of the third, which is the same as in *volubilis*, and not less as stated by Kohl. The antennae are more slender than in *volubilis*, and the second joint is relatively longer, being nearly two-thirds longer than the third joint. The tarsal comb is composed of longer and finer spines (nine or ten), the longer ones being fully three-quarters the length of the first tarsal joint (not more than half in *volubilis*).

♂. 20–22 mm. long. I am unable to compare this sex with that of *volubilis*, since I have seen no examples of the latter. The comparison is therefore made with the type of *haemorrhoidalis*. The wings are slightly paler. The tergites are pruinose pubescent. The pilosity and pubescence of the thorax are paler and less abundant than in *haemorrhoidalis*, the pilosity being brownish black and the pubescence grey, so that the insect looks less black. As in the ♀, the dorsum of the epinotum is longer than in *haemorrhoidalis*, and the apical groove between the dorsum and declivity is absent, although a small apical pit is present. The abdomen is distinctly narrower, more elliptical than broadly ovate, the abdominal complex beyond the first tergite being two-thirds longer than wide (only one-half longer in the type of the species). The apical sternite is abruptly acuminate at the apex, as in *incomptum* Gerst., but the apical tergite and the genitalia are the same as in *haemorrhoidalis*.

The sternites are almost glabrous, without even the few long hairs which are present in *haemorrhoidalis*. Second joint of the flagellum half as long again as the third. The interocular distance on the vertex is fully as long as the second joint of the flagellum plus two-thirds of the third joint. The petiole is as long as the second joint of the hind tarsus.

Willowmore, Sunday River and Algoa Bay, C.P. (Dr H. Brauns). Types in the Vienna Museum.

*C. (Proterosphex) incomptum* Gerst. (figs. 13, 13a and b). *Archiv f. Naturges.* xxxvii, p. 352, ♂. 1871. Kohl, *Ann. K.K.N.H. Mus. Wien*, x, p. 67. 1895. *C. nyanzae* Turner. *Ann. Mag. N.H.* (9), 1, no. 5, p. 358, ♂, ♀. 1918.

♂. 18–23 mm. long. Very closely allied to *haemorrhoidalis*, from which it differs as follows:

Second joint of the flagellum not quite one-third longer than the third joint. Sternites at the sides fringed with long black hairs. Apical tergite with a shallow longitudinal impression in the middle, the apical margin slightly sinuate in the middle.

Apical sternite not roundly triangular as in *haemorrhoidalis* but somewhat abruptly acuminate apically, the apex pubescent. The outer paramera of the genitalia are wider than in *haemorrhoidalis*, but on the whole the genitalia have very much the same shape as in that species. Wings much paler, merely

pale brown, the bluish lustre much less apparent than in *haemorrhoidalis*. Gerstaecker describes the type as having greyish yellow hairs intermixed with black ones on the clypeus, and a dense, woolly, greyish yellow pilosity on the sides and posterior part of the thorax. The type has been re-described, and the genitalia figured by Kohl. A specimen from Nyasaland in the Brit. Museum, another from the Matopos, S.R. in the Rhodesia Museum, and several others from Portuguese East Africa, Natal and Zululand in the collections of the Transvaal and South African Museums agree in every way with Kohl's description except that the pilosity is entirely black as in *haemorrhoidalis*.

The identification of *nyanzae* Turner is based on an examination of a ♂ and a ♀ from Uganda in the British Museum collection, and determined as such by Turner himself. The genitalia of the ♂ agree exactly with the figure given by Kohl of *incomptum* Gerst.

♀. 24 mm. long. Dorsal surface of the abdomen shining, as in *nigrohirtum* Kohl, with which this species is also closely allied. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus half of the third. The carina on the base of the clypeus is much shorter than in the ♂. Second joint of the flagellum a little more than half as long again as the third joint.

*C. (Proterosphex) nigrohirtum* Kohl (figs. 14, 14a and b). *Ann. K.K.N.H. Mus. Wien*, x, p. 66, ♂. 1895.

*S. Bohemanni* var. *camerunicus* Strand. *Archiv f. Naturges.* LXXXI, p. 105, ♀. 1915.

♂. 20–25 mm. long. Black. Clypeus, temples and pronotal collar above, pronotal tubercles, mesosternum, coxae and outer face of the anterior femora with a greyish silvery pubescence, scanty and inconspicuous except on the clypeus. Temples and anterior coxae with a long whitish pilosity intermixed

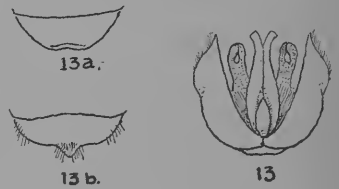


Fig. 13. *Chlorion incomptum*, ♂, genitalia, dorsal view; a, ♂, apical tergite; b, ♂, apical sternite.



with black hairs. Pilosity on the rest of the body black. Abdomen above smooth and shining, without pubescence, the last three tergites with a sparse pilosity. Sternites shining, the third to sixth with fimbriae of long, curved, black hairs at the sides, those on the sixth dense, the seventh with a few short hairs at the sides, the eighth with a short pilosity at the apex. Wings dark brown, with a violaceous lustre. Labrum not carinate. Clypeus distinctly flattened over a triangular area whose base extends over three-fifths of the anterior margin; a low longitudinal carina extends over the basal half of the clypeus. The clypeus is rather narrow, being fully as long as wide. Second joint of the flagellum a little less than one-third longer than the third joint. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus two-thirds of the third joint. Dorsum and declivity of the epinotum slightly coriaceous and also very indistinctly transversely rugulose. Petiole as long as the second joint of the hind tarsus. Apical margin of the seventh tergite arcuate, feebly sinuate in the middle; on the apical half of the segment there is a shallow median longitudinal impression. Eighth sternite like that of *incomptum*, but less abruptly acuminate at the apex. The genitalia are very much like those of *incomptum*, but the outer paramera are more gradually narrowed towards the apex and their apical third is fringed with longer hairs.

♀. (Hitherto undescribed.) 26–30 mm. long. Labrum carinate longitudinally in the middle. Scutellum shining, deeply impressed lengthwise in the middle, very finely and sparsely punctured. Dorsum of epinotum more distinctly rugulose than in the ♂; the median longitudinal impression is much more distinct than in the ♂, and ends in a large shallow pit at the apex. The declivity of the epinotum is clearly transversely rugulose. Abdomen shining, without pubescence, the fifth and sixth tergites with a sparse exserted pilosity, and also sparsely punctured like the fourth to sixth sternites. Clypeus about one-fifth wider than long, the anterior margin convex, with a pair of very small blunt teeth in the middle. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus one-third of the third joint. Second joint nearly half as long again as the third. Inner face of the posterior tibiae clothed with a dense, fulvous brown pubescence. Petiole not quite as long as the second joint of the hind tarsus. Otherwise like the ♂.

The description given above is based on two specimens from Uganda in the British Museum collection, determined by Kohl himself. The shining abdomen in the ♀ distinguishes this species easily from the rest of the *haemorrhoidalis-Bohemanni* group except *incomptum* which is, however, a smaller insect.

Zanzibar and Usambara; Bugoma Forest, Uganda (S. A. Neave); Abak, Nigeria (M. Jeffreys). (R.M. coll.)

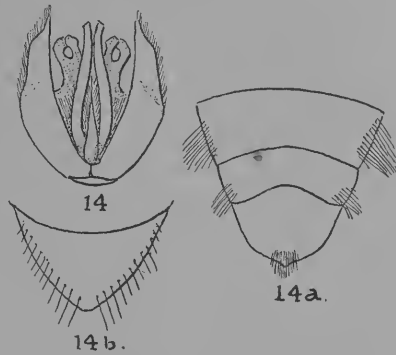


Fig. 14. *Chlorion nigrohirtum*, ♂, genitalia, dorsal view; a, ♂, sixth to eighth sternites; b, ♂, apical tergite.

*C. (Proterosphex) Bohemanni* Dhlb. (figs. 15 and 15 a-c). *Hymen. Eur.* 1, p. 436, ♂. 1845.

*kilimandjaroensis* Cameron. Sjöstedt, *Kilimandjaro-Meru Exped.* II, p. 262, ♀, ♂. 1910.

*transvaalensis* Cameron. *Ann. Trans. Mus.* II, p. 140, ♂. 1910.

*Abbotii* Fox. *Ent. News*, II, p. 42, ♀. 1891.

♀. 26-30 mm. long. Clypeus without greyish yellow pubescence; otherwise this species resembles *haemorrhoidalis* in colour, sculpture and pilosity. It is larger and stouter than that species, and may be distinguished from it by the following characters: clypeus wider, nearly two-fifths wider than long (only one-fifth in *haemorrhoidalis*). Pronotal collar shorter, discoid, almost linear above. Second joint of the flagellum two-thirds longer than the third joint. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus five-sixths of the third joint. Apical tergite more coarsely and more densely punctured. Basal joint of the anterior tarsi with nine spines on the outer margin.

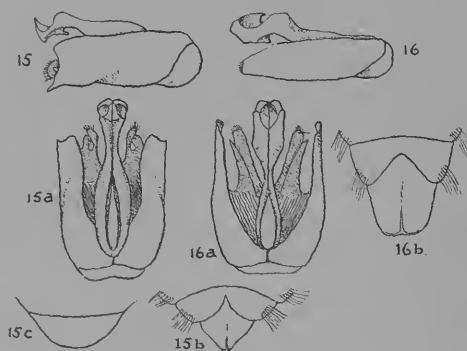


Fig. 15. *Chlorion Bohemanni*, ♂, genitalia, lateral view; a, ♂, genitalia, dorsal view; b, ♂, seventh and eighth sternites; c, ♂, apical tergite.

Fig. 16. *Chlorion Neavei*, ♂, genitalia, lateral view; a, ♂, genitalia, dorsal view; b, ♂, seventh and eighth sternites.

♂. 27-30 mm. long. Second joint of the flagellum two-thirds longer than the third. Clypeus distinctly less convex than in *haemorrhoidalis*. Seventh sternite deeply and angularly emarginate, the apical margin of the eighth sternite convex, and feebly sinuate in the middle; it has also a median longitudinal impressed line at the base. The genitalia are quite different from those of *haemorrhoidalis*; the outer paramera are concavely truncate at the apex, the lower angle produced into a tooth; the inner paramera (penis, or sagittae) are much widened apically, excavated above and bluntly hamate below. They are not unlike those of *Stadelmanni* Kohl from the lateral aspect, but very different from the dorsal. The sternites are fringed with long black hairs on their apical halves, more especially towards the sides, but not so densely as in *incomptum*.

Natal; Kilimandjaro; Matopos, S.R.; Johannesburg.

*C. (Proterosphex) Neavei* n.sp. (figs. 16, 16 a and b).

♂. 33 mm. long. A specimen from Nyasaland in the British Museum collection, determined by Turner as *Bohemanni*, agrees in every way with Kohl's description of Dahlbom's type except in the structure of the apical sternite and the genitalia. The seventh sternite is deeply emarginate as in

*Bohemanni*, but the eighth sternite is broadly rounded at the apex, not bluntly angular as in *Bohemanni*. The genitalia are altogether different (see figs. 15 and 16).

♀. A specimen of this sex, 29 mm. long, taken in the same locality as the ♂ described above, should probably be assigned to this species. The clypeus is even wider than in *Bohemanni*, fully two-fifths wider than long. Otherwise no appreciable differences between the two species appear to exist.

Mlanje, Nyasaland; March (S. A. Neave). Type in the British Museum.

*C. (Proterosphex) Schoutedeni* Kohl (figs. 17 and 17a). *Rev. Zool. Afric.* III, p. 205, ♂. 1913.

♂. 27 mm. long. Clypeus covered with a dense silky pubescence, entirely obscuring the sculpture, and varying from whitish to brownish golden in colour. Mesonotum with dark chestnut-brown pilosity, the epinotum with greyish pilosity. Sometimes the pilosity of the thorax is black, and on the declivity of the epinotum brown. Apical third of the seventh tergite fusco-ferruginous. Otherwise this species resembles *haemorrhoidalis*, but the wings are much paler, being pale fuscous, the apical margin darker. Labrum not carinate. Second joint of the flagellum two-thirds longer than the third joint. Inner margins of the eyes parallel. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum. Petiole nearly as long as the second joint of the hind tarsus, or to the second joint of the flagellum. Apical margin of the last tergite semicircular; eighth sternite carinate longitudinally in the middle, its apical half fairly densely pilose. Inner paramera of the genitalia dilated at the apex, with a small tooth on each side some distance from the end. Otherwise like *haemorrhoidalis* ♂.

Mpika, Belgian Congo; Mlanje, Nyasaland; Durban.

*C. (Proterosphex) Stadelmanni* Kohl. *Ann. K.K.N.H. Mus. Wien*, x, p. 67, ♂. 1895.

♂. Black; pilosity black. Wings fuscous, with blue and violet metallic lustre. Mandibles bidentate. Labrum without a distinct median longitudinal carina. Clypeus subtruncate, slightly arcuately emarginate, with a dull silvery pubescence underlying black hairs. Inner margins of the eyes slightly convergent below; the distance between them across the clypeus equal to the length of the second and third joints of the flagellum, across the vertex equal to the length of the second joint plus two-thirds of the third joint. Dorsum of epinotum coriaceous, transversely rugoso-striate. Petiole about as long as the second joint of the hind tarsus. Apical tergite deeply emarginate in the middle of the posterior margin. 28 mm. long.

"This species bears a great resemblance to *nigrohirtum* Kohl, but differs from it by the deep median excision of the apical margin of the last tergite, the shape of the eighth sternite, and most distinctly by the shape of the genitalia. Only the sixth to eighth sternites have lateral black fimbriae. The eighth sternite is slightly excised in the middle of the posterior margin."

Delagoa Bay.

This species is very distinctly characterised by the shape of the genitalia and the shape of the apical segment of the abdomen, which are clearly illustrated in the plate accompanying Kohl's paper. The inner paramera are

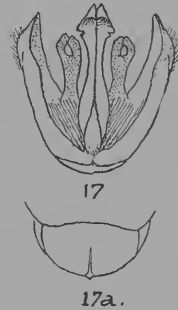


Fig. 17. *Chlorion Schoutedeni*, ♂, genitalia, dorsal view; a, ♂, eighth sternite.

peculiarly shaped and unmistakable. On this account some specimens from Scottsburg, Natal, should be attached to this species, as the genitalia are identical with those figured by Kohl, but since the apical tergite is not excised at the apex, they may be separated as a variety as follows:

*Stadelmanni* var. *integrum*, n.v. (figs. 18, 18 a and b).

♂. 25-27 mm. long. Seventh tergite with the apical margin ferruginous and entire, almost semicircular, the middle produced into a blunt and very inconspicuous angle. Otherwise like the type of the species. The sculpture of the epinotal dorsum is distinctly coarser than in *haemorrhoidalis*, transversely rugose rather than rugulose, and the short blackish pilosity on the mesonotum is more abundant than in that species. Labrum not carinate, but with a small median tubercle behind the anterior margin. Second joint of the flagellum two-thirds longer than the third joint. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus half of the third.

♀. 27 mm. long. Two examples, taken at the same time and place as the ♂♂ described above, are probably the ♀♀ of this form. Apart from the stronger sculpture of the epinotum, slightly finer puncturation of the apical tergite, and the presence of ten spines on the outer margin of the basal joint of the anterior tarsi, they do not differ from *Bohemanni* ♀.

Scottsburg, Natal, March, 4 ♂♂, 2 ♀♀ (R. H. R. Stevenson); Chirinda Forest, S.R. 1 ♀; Rikatla, Portuguese East Africa, 3 ♂♂ (A. Junod).

Types in coll. Stevenson. (R.M. and T.M. colls.)

*C. (Proterosphex) abyssinicum* n.sp. (figs. 19, 19 a and b).

♂. 25-31 mm. long. Black. Mandibles bidentate, ferruginous except at the apex. Wings pale brown, with a faint violaceous lustre. Clypeus covered with a dense, decumbent and brownish golden pubescence. Eighth sternite fusco-ferruginous apically. Pilosity black. Sculpture of head and thorax like that of *Bohemanni*. Sternites with a long black pilosity, forming fairly dense lateral fimbriae on the fourth to seventh sternites. These, and also the third sternite, are distinctly punctured, the punctures shallow but large. Labrum carinate longitudinally in the middle. Clypeus arcuately truncate, with a low carina on the basal half and a short and wide triangular protuberance in the middle underneath the anterior margin. Inner margins of the eyes parallel over the greater part of their length, slightly convergent above at about the level of the anterior ocellus. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum plus half of the fourth. Second joint of the flagellum two-thirds longer than the third. Pronotum, scutellum and epinotum as in *Bohemanni*. Petiole as long as the second joint of the hind tarsus. Apical margin of the seventh tergite convex and entire. Eighth sternite produced into a very short rectangular lobe which is bluntly carinate lengthwise in the middle. Inner paramera of the genitalia much longer

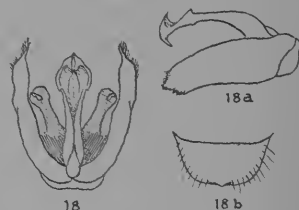


Fig. 18. *Chlorion Stadelmanni* var. *integrum*, ♂, genitalia, dorsal view; a, lateral view; b, apical tergite.

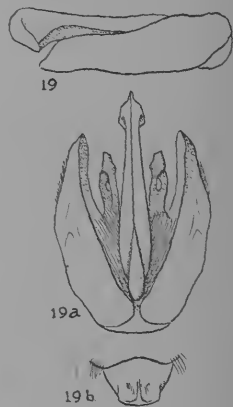


Fig. 19. *Chlorion abyssinicum*, ♂, genitalia, lateral view; a, dorsal view; b, eighth sternite.

than the outer, seen from above abruptly amplified before the fairly acute apex.

Abyssinia. 2 ♂♂ (R. E. Turner). The type measures 31 mm. long, the other specimen, although so much smaller, differs from it in nothing but size. Type in the British Museum.

*C. (Proterosphex) observabilis* Turner. *Ann. Mag. N.H.* (9), vol. 1, No. 5, p. 360, ♀. 1918.

♀. 26–30 mm. long. Black. Wings pale yellowish brown, with a very faint violaceous lustre; the veins dark brown. Clypeus covered with a dense pale golden pubescence and a few long black hairs. Vertex with a sparse black pilosity, the temples with long, pale golden and brown hairs intermixed. Pronotum with a brownish golden and fairly sparse pubescence, intermixed with a short blackish pilosity. Mesonotum and metanotum with short black hairs. Mesopleurae, mesosternum and epinotum covered with a dense, pale golden pubescence intermixed with a long pilosity of the same colour. The pubescence entirely obscures the underlying sculpture. Scutellum shining and glabrous, impressed longitudinally in the middle; the metanotum not impressed. Tergites with a microscopic blackish pubescence and fairly dull; the last two tergites sparsely punctured and with a few long black hairs. Sternites shining. Clypeus like that of *Bohemanni*. Inner margins of the eyes parallel. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus two-thirds of the third joint, or very slightly greater than the length of the first two joints. Posterior ocelli a little nearer to each other than they are to the eyes. Second joint of the flagellum three-fourths longer than the third. Petiole as long as the third joint of the hind tarsus.

Tero Forest, S.E. Buddu, Uganda. September (S. A. Neave); Congo (G. L. E. Andreae). Type in the British Museum.

*C. (Proterosphex) rufiscutis* Turner (figs. 20 and 20a). *Loc. cit.* p. 359, ♀, ♂.

♀. 24 mm. long. Black. Mandibles excepting the apex, clypeus, scape and first five joints of the flagellum, pronotal collar, tegulae, the upper angle of the mesopleurae below them, scutellum, metanotum and the legs, excepting the coxae above, pale ferruginous. Sixth abdominal segment, apical margin of the fifth tergite and the whole of the fifth sternite, fusco-ferruginous. Wings hyaline, tinged with yellow at the base and along the costa, the apical margin fuscous; the veins brown. Clypeus and lower half of the face covered with a short golden pubescence and a sparse deep yellow pilosity. The vertex and temples with a few long, erect and fulvous hairs. Pronotum and mesothorax with a sparse yellowish grey pilosity. Epinotum with a long greyish pilosity and a fine whitish pubescence, denser on the sides and declivity than on the dorsum. Abdomen pruinose above, the last two segments with a few long, exerted, brown hairs. Clypeus very little wider than long, moderately convex, the anterior margin convex. Inner margins of the eyes parallel. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus half of the third. The second joint is half as long again as the third. Pronotal collar not very short, not linear above; there is a very shallow sulcus, sometimes absent, in the middle of the dorsal face. Mesonotum, mesopleurae, scutellum and metanotum very finely and sparsely punctured. Scutellum

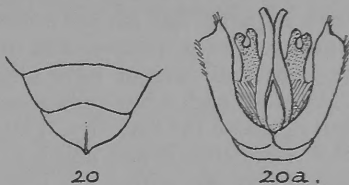


Fig. 20. *Chlorion rufiscutis*, ♂, seventh and eighth sternites; a, ♂, genitalia, dorsal view.

strongly convex, impressed longitudinally in the middle; the metanotum convex and feebly bituberculate in the middle. Dorsum of the epinotum finely, closely and transversely striate, and also with about seven or eight transverse rugae which are not very apparent unless the segment is viewed obliquely from in front. Petiole a little longer than the second joint of the hind tarsus. Fourth and fifth tergites finely and sparsely punctured. Comb of the anterior tarsi long and slender, the basal joint with ten spines on the outer margin which are more than half as long as the joint itself.

♂. 22 mm. long. Black. The only parts which are reddish are the mandibles excepting the apex, the anterior half of the clypeus, scapes, first joint of the flagellum below, tegulae, the femora below and at the apex above, tibiae, and first two joints of the tarsi. The posterior tibiae are more or less fuscous on the outer face. Wings paler than in the ♀. Lower half of the face and the clypeus covered with silvery pubescence, the sparse pilosity on those parts pale yellow. Anterior margin of the clypeus shallowly concave. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus half of the third joint. Pronotal collar thicker than in the ♀, the dorsal face flatter. Mesonotum closely rugulose and finely punctured. Dorsum of the epinotum transversely striate, but without the outstanding rugae which are present in the ♀. Petiole as in the ♀. Abdomen narrow; the apical margin of the seventh tergite semicircular, of the seventh sternite shallowly emarginate. The eighth sternite is pointed at the apex and subcarinate lengthwise in the middle. The genitalia resemble those of *incomptum*, but the outer paramera are broader at the apex. Otherwise like the ♀.

Nyasaland, Rhodesia, Zululand and Transvaal. (R.M. and T.M. colls.)

*C. (Proterosphex) gorgon* Kohl. *Rev. Zool. Afric.* III, p 204, ♀. 1913.

♀. 21-24 mm. long. Black. Clypeus, first five or six joints of the antennae, mandibles excepting the apex, pronotal collar, tegulae, the upper angle of the mesopleurae below the tegulae and the legs excluding the coxae, ferruginous. Pronotal tubercles and the apical tergite fusco-ferruginous. Wings reddish brown, with a violaceous lustre. Clypeus and lower half of the face with a sparse, dull silvery pubescence and a long, outstanding, reddish yellow pilosity. Vertex, temples and thorax with a pale brownish pilosity; the vertex, temples and occiput have also a decumbent brownish yellow pubescence. Epinotum with white pubescence and pilosity, the latter scanty on the dorsum but dense on the declivity. Petiole sparsely pilose. First two tergites pruinose, the rest glabrous and shining, very sparsely and very finely punctured; the apical segment with a few long reddish hairs. Vertex, pronotal collar, mesonotum and mesopleurae slightly shining, very finely and sparsely punctured, the mesopleurae somewhat less sparsely than the mesonotum. Scutellum and metanotum shining, the former flat, sparsely and finely punctured and not impressed in the middle; the metanotum very feebly impressed lengthwise in the middle. Dorsum of epinotum dull, with five or six large and very prominent transverse ridges, the spaces between the latter concave. Labrum with a strong median longitudinal carina which reaches the apical margin. Clypeus convex, the anterior margin convex and with a short transverse impression behind it. Inner margins of the eyes nearly parallel. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus two-thirds to three-quarters of the third joint. The second joint of the flagellum is half as long again as the third. Pronotal collar short but not linear above, the anterior face somewhat concave. Petiole as long as the second joint of the hind tarsus. Basal joint of the anterior tarsi with 11 or 12 very long, thin and reddish spines on the outer margin.

♂. 18–20 mm. long. Black. Mandibles ferruginous over the basal half. Tegulae fusco-ferruginous posteriorly. Wings paler than in the ♀. Pilosity and pubescence of the face and clypeus silvery. Labrum not carinate. Clypeus strongly convex, the anterior margin arcuately emarginate over the middle third; a median longitudinal carina extends over the basal third. Inner margins of the eyes slightly convergent below. Interocular distance on the vertex equal to the length of the second joint of the flagellum plus half of the third. Mesonotum and scutellum more closely punctured than in the ♀, the scutellum less shining and feebly convex. The dorsum of the epinotum with not more than four transverse ridges, which are wider and lower than those in the ♀. Petiole as long as the second joint of the hind tarsus. Seventh tergite rounded at the apex. Eighth sternite like that of *rufiscutis*. The genitalia are like those of *haemorrhoidalis*, but the inner lobes of the outer paramera are narrower.

Lukafu, Belgian Congo; Victoria Falls, Sawmills, Redbank and Bulawayo, S.R. September to January. (R.M. and T.M. colls.)

The following species which are unknown to me in nature cannot on that account be placed within their respective subgenera.

*C. optimum* Smith. *Cat. Hymen. B.M.* IV, p. 245, ♀. 1856.

“♀. Length 13 lines (ca. 28 mm.). Black: the face and cheeks densely clothed with rich golden pubescence; on the vertex are scattered a few erect fuscous hairs. The prothorax, sides and hinder margin of the mesothorax above, the tubercles and a spot beneath the wings, clothed with bright golden pubescence; the postscutellum has a spot on each side, and the apex of the metathorax (epinotum) is densely clothed with short silvery-white pubescence; there is also a silvery stripe on the sides at the insertion of the posterior coxae; the metathorax is thinly covered with a changeable glittering pile, observable in different lights; a similar pile also covers the legs; wings yellowish-hyaline, their apical margins clouded, the nervures black. Abdomen red, with the petiole and three apical segments black; the third segment has on each side an oblique fuscous line which unites in the middle of the segment; the fourth segment has its apical margin narrowly and obscurely ferruginous; the apical segment rugose.

“Hab. Africa (Gambia).”

*C. trichionotus* Cameron. *Ann. Trans. Mus.* II, p. 138, ♂. 1910.

The types of this species and of *C. jansei* can no longer be found in the Transvaal Museum. This species is very probably, to judge by the description, synonymous with *C. Simoni*. It obviously does not belong to the subgenus *Parasphex* in which Cameron places it, as the petiole is much too long, being as long as the hind femur.

*C. jansei* Cameron. *Loc. cit.* p. 139, ♂.

This species fits *C. rufiscutis* Turner fairly closely, but the description of the colour is too confused to permit of any certainty in this identification. It is placed by Cameron in the subgenus *Isodontia*, to which it cannot belong on account of the short petiole which is only one-fourth longer than the hind coxa. It is undoubtedly a member of the subgenus *Proterosphex*.



# OLD NEGRO SKULLS FROM CAVES IN THE NORTHERN TRANSVAAL

BY DR VIKTOR LEBZELTER

With 3 Plates and 1 Text-figure

BY the liberality of the Director of the Transvaal Museum, I have had the opportunity of studying the skeleton material in that institution. In the following pages I give a short description of the three old negro skulls from caves in the Northern Transvaal.

## GENERAL DESCRIPTION.

*Skull A* (♂). The frontal bone is relatively low, but arcus superciliares not present, temples well curved. The vertex lies back of the bregma. Tubera parietalia are distinguishable. The occipital bone is strongly curved in sagittal direction. The foramen magnum is longovalic. Condyli are very high. Processus mastoidei relatively smaller.

*Skull A* is hyperdolichocran, orthocran, akrocran mesen, mesokonch, chamarrhin.

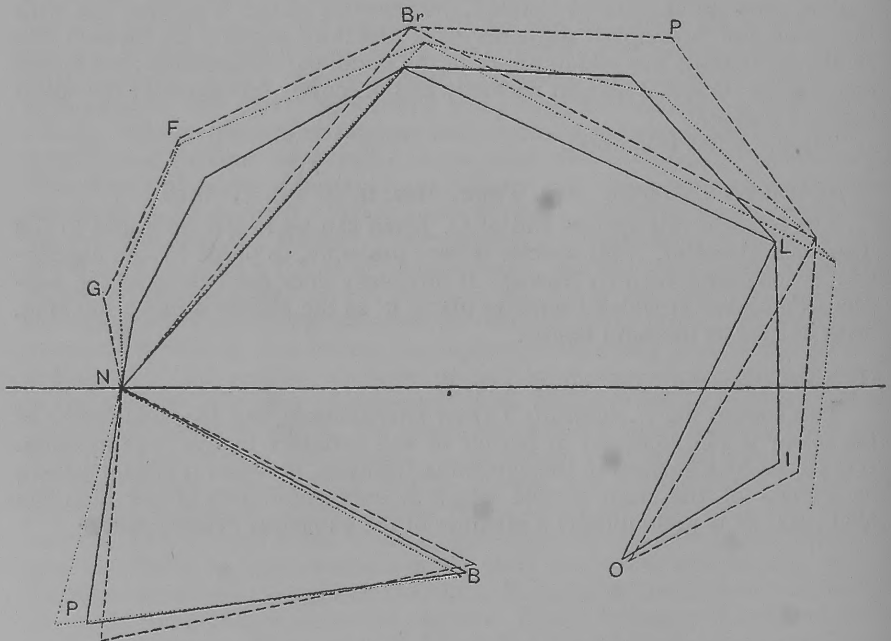


Table I. ——— Skull A.    - - - Skull B.    ..... Skull C.